1. A 66-year-old diabetic man with peripheral neuropathy and a 25 gm palpably normal prostate has urinary frequency, urgency, and urge incontinence. He voided 300 ml with a PVR of 380 ml. Urodynamic studies reveal a maximum uroflow of 8 ml/sec, a voiding pressure of 88 cm H_2O, and a bladder capacity of 850 ml with decreased bladder sensation. Cystourethroscopy reveals mild trilobar prostatic enlargement. The most effective treatment is:

   A. CIC.
   B. CIC and oxybutynin.
   C. neuromodulation.
   D. tamsulosin.
   E. TURP.

2. Placement of a ureteral stent in an unobstructed system will result in:

   A. increase in ureteral contractility.
   B. decrease in ureteral contractility.
   C. atrophy of the ureteral mucosa.
   D. atrophy of the ureteral smooth muscle.
   E. decrease in intrapelvic pressure.

3. A 25-year-old man has a thickened, indurated fat mass excised from his spermatic cord at the time of inguinal hernia repair. Final pathology reveals low grade liposarcoma with negative margins. The next step is:

   A. observation.
   B. inguinal orchiectomy.
   C. inguinal orchiectomy and RPLND.
   D. inguinal orchiectomy and hemiscrotectomy.
   E. inguinal/abdominal radiation.

4. Angiotensin II causes blood pressure elevation by its effect on:

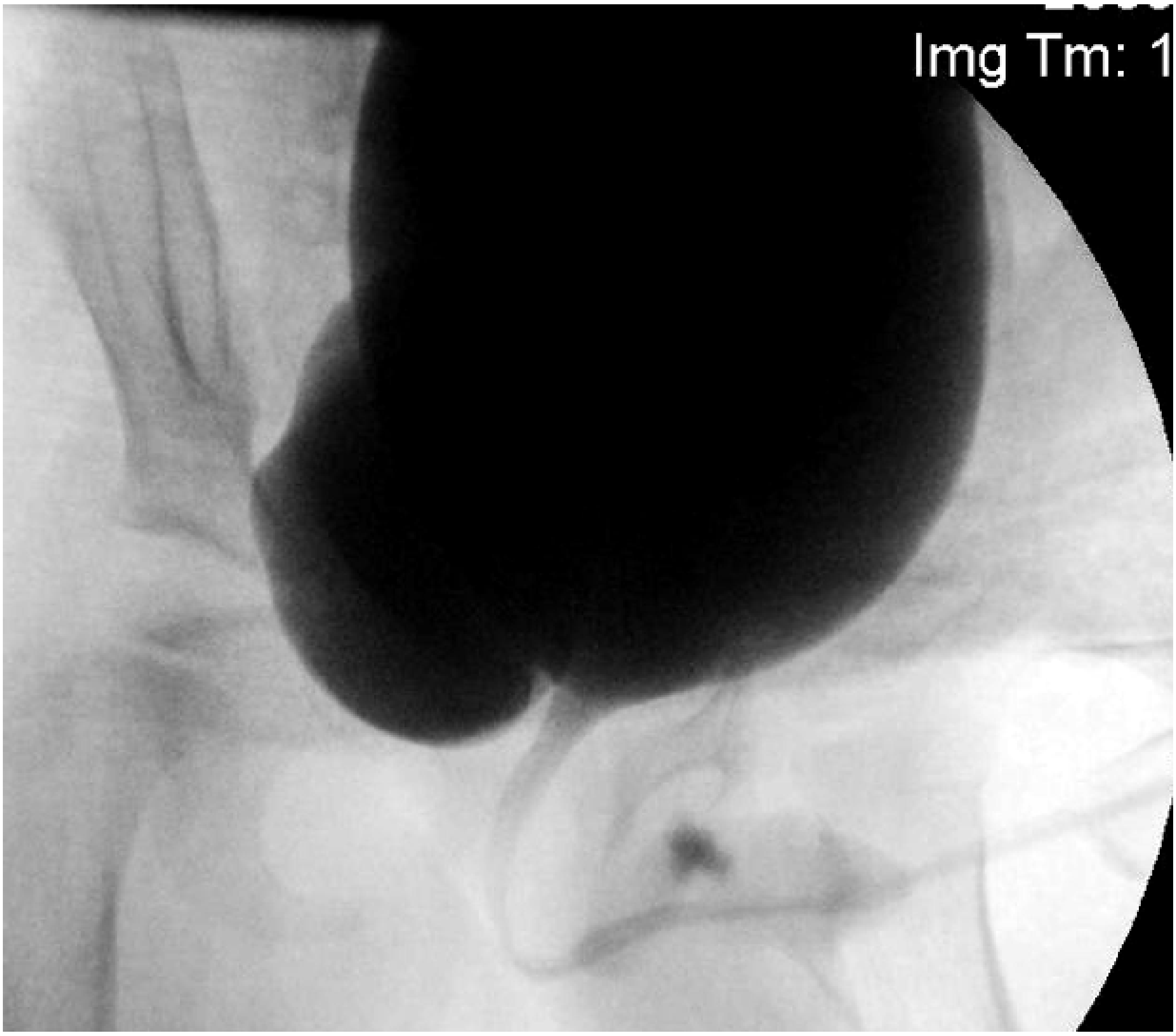
   A. peripheral vascular tone and cardiac rate.
   B. peripheral vascular tone and blood volume.
   C. blood volume and cardiac output.
   D. blood volume and renin substrate.
   E. the juxtaglomerular apparatus.

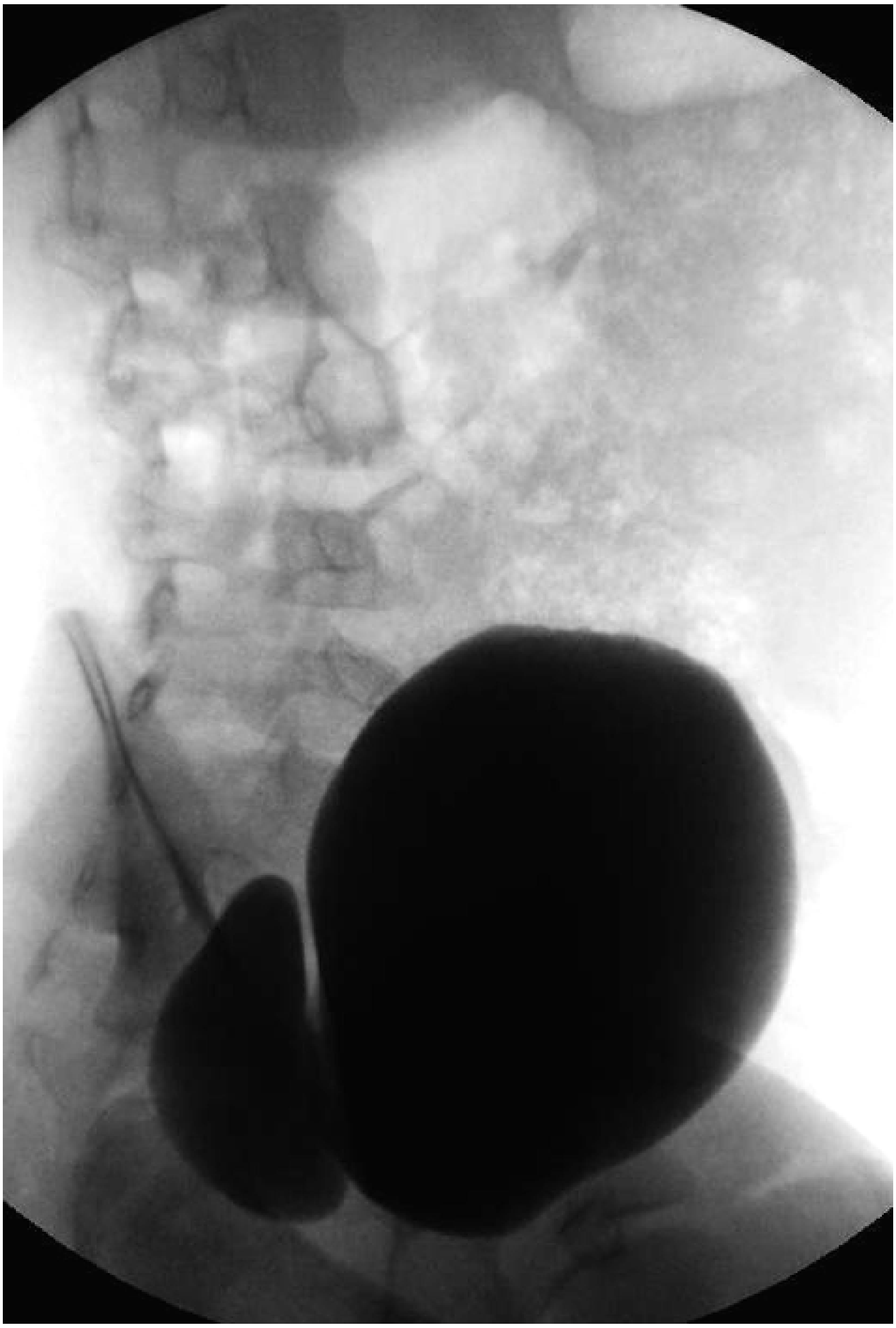
5. Serum osmolality is determined by utilizing a formula which involves the sum of which three osmotically active substances in the blood:

   A. sodium, potassium, glucose.
   B. sodium, chloride, urea nitrogen.
   C. sodium, glucose, urea nitrogen.
   D. albumin, glucose, creatinine.
   E. albumin, globulin, urea nitrogen.

6. A two-year-old boy has foul smelling urine and dysuria. A urine culture grew pan-sensitive coagulase negative Staphylococcus. His symptoms resolved with antibiotics and a renal ultrasound is normal. A VCUG is shown. The next step is:

A. prophylactic antibiotics.
B. behavioral modification.
C. transurethral incision of valves.
D. endoscopic puncture.
E. diverticulectomy and ipsilateral ureteral reimplantation.





7. A 22-year-old man involved in an MVC is evaluated for multi-system trauma. CT scan shows complete enhancement of both kidneys, a 2 cm laceration in the lower pole of the left kidney, and a left perinephric hematoma. A 3 cm splenic laceration that does not extend to the hilum is also seen. He is managed with observation. Ten days later, he develops acute abdominal pain. On physical examination, he is diaphoretic and has a rigid abdomen. His temperature is 38.5° C, pulse 120/min, and blood pressure is 90/70 mm Hg. This clinical condition is most likely due to:

A. delayed sepsis.
B. persistent urinary extravasation.
C. delayed renal hemorrhage.
D. delayed splenic hemorrhage.
E. missed bowel injury.

8. A 24-year-old man with azoospermia and an ejaculate volume of 0.5 ml has a palpably normal left vas deferens, a nonpalpable right vas deferens, and a normal DRE. Both testes measure 30 ml. The most useful diagnostic study for infertility is:

A. TRUS.
B. serum testosterone.
C. post-ejaculatory urinalysis.
D. testicular biopsy.
E. seminal fructose.

9. A 47-year-old man has palpable right inguinal adenopathy following partial penectomy for a 4 cm T2 squamous cell cancer. Needle biopsy of a right inguinal lymph node reveals metastatic cancer. The pelvic lymph nodes are radiologically normal. The next step is:

A. antibiotic therapy and reexamination.
B. pelvic node dissection.
C. right superficial inguinal node dissection.
D. right superficial and deep, left superficial inguinal node dissection.
E. bilateral superficial and deep inguinal node dissection.

10. The best predictor of immediate graft function following living donor renal transplantation is:

A. warm ischemia time.
B. cold ischemia time.
C. renal revascularization time.
D. total ischemia time.
E. donor kidney urine output just prior to nephrectomy.

11. A 10 Fr nephrostomy tube was placed uneventfully to drain a pyonephrotic kidney. Follow-up nephrostogram reveals a 6 cm staghorn calculus. The percutaneous nephrostomy tube enters directly into the renal pelvis. At time of percutaneous nephrolithotomy, optimal access is obtained via:

A. dilating the established nephrostomy tract.
B. a new percutaneous tract - middle anterior calyx.
C. a new percutaneous tract - middle posterior calyx.
D. a new percutaneous tract - inferior anterior calyx.
E. a new percutaneous tract - inferior posterior calyx.

12. The most useful parameter to assess the malignant risk of an incidental adrenal mass is tumor:

A. grade.
B. histology.
C. isointensity on MRI scan.
D. metabolic activity.
E. size.

13. A 65-year-old post-menopausal woman with decreased bone density develops her third calcium oxalate renal calculus in five years. Metabolic evaluation reveals a mildly elevated urinary calcium after calcium loading, consistent with Type I absorptive hypercalciuria. The most appropriate treatment is:

A. sodium cellulose phosphate.
B. orthophosphate.
C. hydrochlorothiazide.
D. potassium citrate.
E. magnesium oxide.

14. In patients with androgen-independent metastatic prostate cancer, the median improvement in overall survival of docetaxel + prednisone every three weeks compared to mitoxantrone + prednisone is:

A. 2.5 months.
B. 4.5 months.
C. 6 months.
D. 12 months.
E. 18 months.

15. A 24-year-old man elects to undergo a modified right template RPLND following right radical orchiectomy for stage I NSGCT. The left limit of the dissection should be:

A. the medial edge of vena cava.
B. the medial edge of the aorta.
C. the mid-aorta.
D. the lateral edge of the aorta.
E. the medial edge of the left ureter.

16. One month after L5 laminectomy, a 30-year-old woman develops lower extremity weakness, a residual urine of 300 ml, and an intermittent urinary stream. Videourodynamics demonstrates detrusor-sphincter dyssynergia. The most likely explanation is:

    A. pseudodyssynergia.
    B. recurrent lumbar disk herniation.
    C. cauda equina syndrome.
    D. undiagnosed multiple sclerosis.
    E. permanent nerve injury from disk.

17. Bacterial biofilms forming on implants and foreign bodies in the urinary tract are comprised of a(an):

    A. surface film of compact microorganisms.
    B. conditioning film comprised of carbohydrate molecules.
    C. linking film from which plank-tonic organisms can arise and spread.
    D. accumulation of microorganisms and their extracellular products forming a structured community.
    E. layer of mucopolysaccharide excreted by bacterial cells to protect them from WBC infiltration.

18. A 25-year-old man has inadequate erections since sustaining a pelvic fracture in a MVC two years ago. After a successful urethral stricture repair, he denies any difficulty with orgasm and ejaculation. Intracavernosal injection of 15 ug of prostaglandin E_1 produces a soft erection. The next step is:

    A. infusion cavernosography.
    B. pelvic/pudendal arteriography.
    C. infusion cavernosometry.
    D. intracavernosal injection of 30 ug of prostaglandin E_1.
    E. color Doppler study of penile arteries.

19. Three weeks after a retropubic bladder neck suspension, a 40-year-old woman develops pelvic and suprapubic pain associated with temperatures to 38.5^{o} C. She experiences difficulty adducting her thighs and has pain on palpation of her symphysis pubis. The most likely diagnosis is:

    A. osteitis pubis.
    B. osteomyelitis of pubis.
    C. obturator nerve injury.
    D. urinary extravasation.
    E. pelvic abscess.

20. A 19-year-old woman is treated with ampicillin for a UTI and develops a pruritic groin rash. Physical examination reveals poorly marginated, red patches on her inner thighs, inguinal folds, and labia. Satellite papules and pustules are scattered at the periphery of the inflammatory process. The most likely diagnosis is:

A. fixed drug reaction.
B. contact dermatitis.
C. candidiasis.
D. molluscum contagiosum.
E. lichen planus.

21. The prostate biopsy technique that samples the anterior prostate gland most effectively is the:

A. 10-core biopsy.
B. 12-core biopsy.
C. saturation biopsy.
D. transurethral biopsy.
E. transperineal biopsy.

22. Patients with polycystic kidney disease, pain, azotemia, and hypertension who undergo laparoscopic marsupialization of their cysts will most likely experience:

A. deterioration of renal function.
B. deterioration of blood pressure control.
C. improvement in renal function.
D. improvement in blood pressure control.
E. relief of pain.

23. A 63-year-old woman has lethargy and joint pain four years following sigmoid neobladder creation. Serum studies reveal bicarbonate 20 mEq/l, calcium 9.1 mg/dl, alkaline phosphatase 249 U/l, hematocrit of 34%. The next step is:

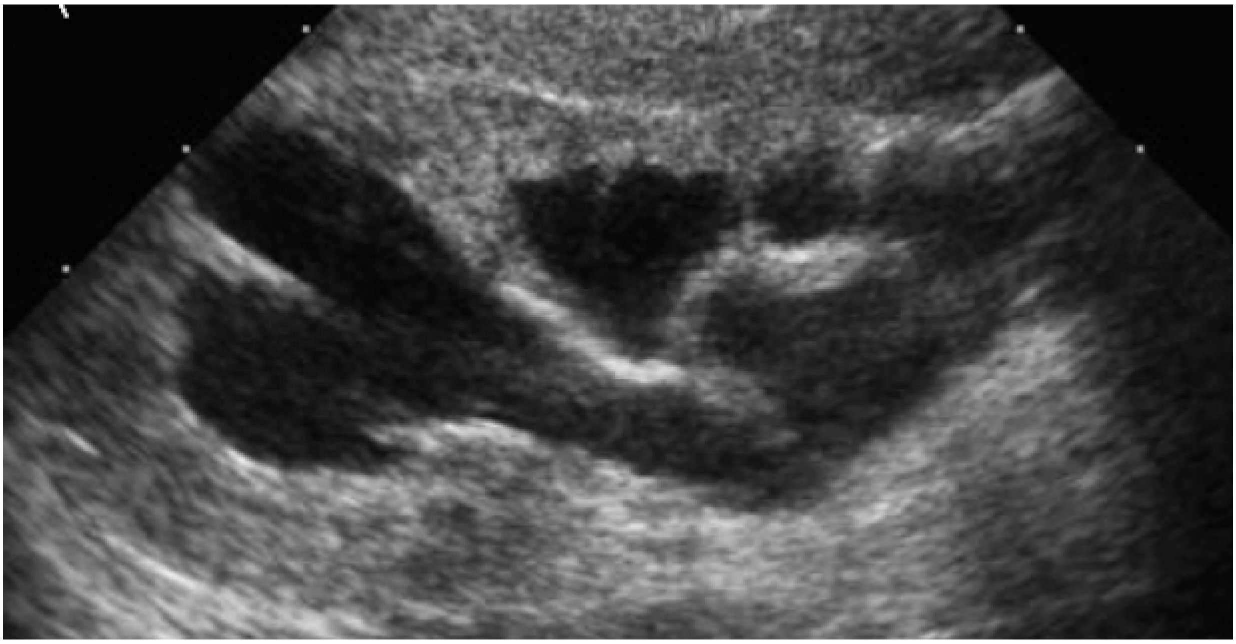
A. oral calcium and Vitamin D.
B. oral magnesium and Vitamin D.
C. oral calcium and potassium citrate.
D. intramuscular Vitamin B12.
E. oral bisphosphonate.

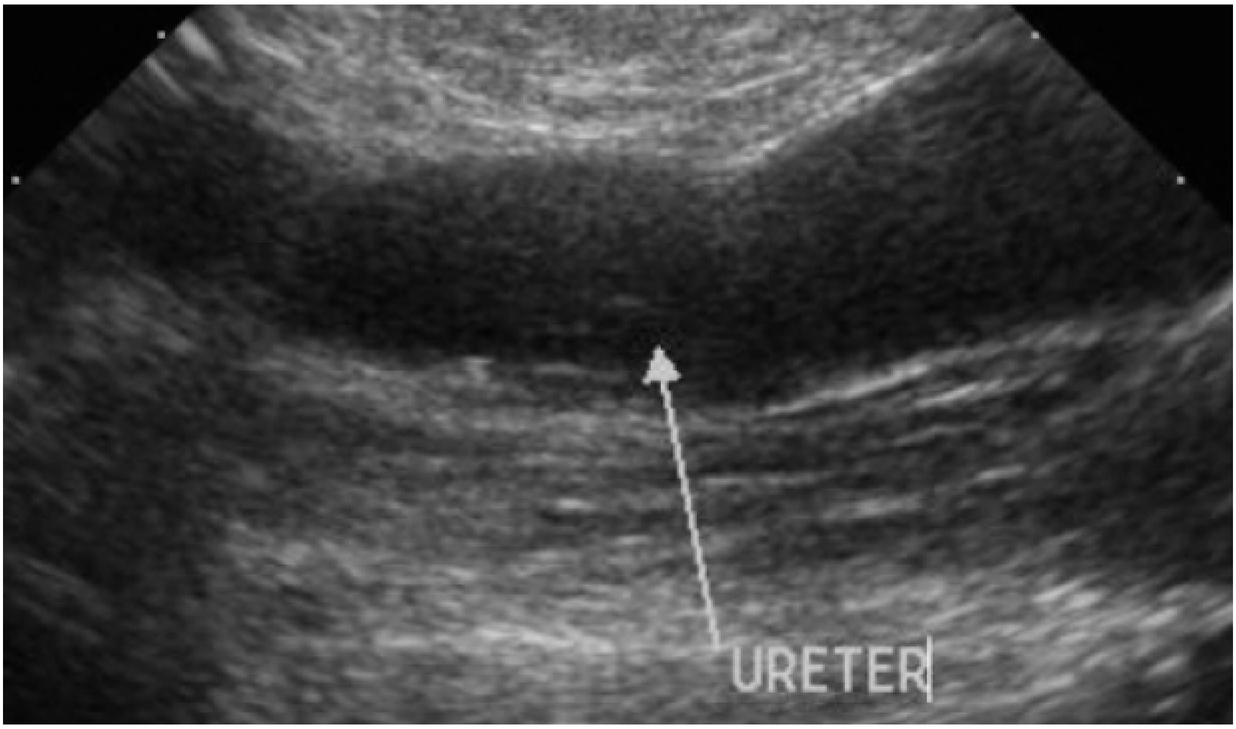
24. A 50-year-old man with end-stage polycystic kidney disease is on chronic hemodialysis. His pre-dialysis potassium is consistently in excess of 5.6 mEq/l. He is dialyzed three times per week for 4-1/2 hours per treatment. The most likely cause of his hyperkalemia is:

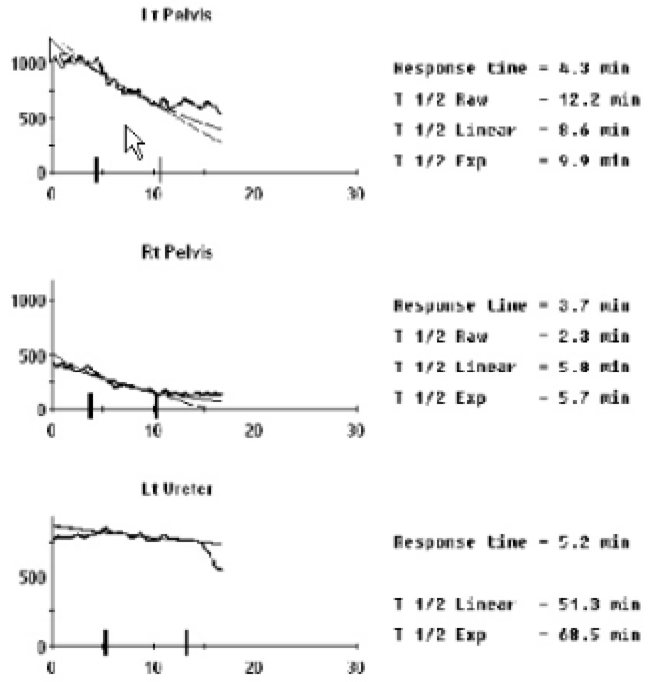
A. dietary indiscretion.
B. chronic alkalosis.
C. gastrointestinal bleeding.
D. inadequate dialysis.
E. adrenal insufficiency.

25. A newborn boy with a history of left prenatal hydroureteronephrosis develops gram negative urosepsis despite prophylactic amoxicillin. VCUG is normal. Renal ultrasound and MAG-3 renal scan are shown. The differential renal function is 74/26 (right/left). The next step is:

A. observation.
B. change prophylaxis to trimethoprim-sulfamethoxazole.
C. cutaneous pyelostomy.
D. distal cutaneous ureterostomy.
E. tapered ureteral reimplantation.





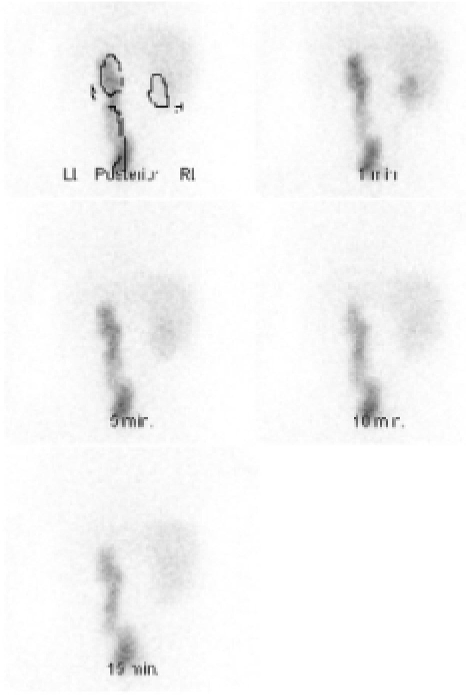


```
Response time = 4.3 min
T 1/2 Raw     - 12.2 min
T 1/2 Linear  - 8.6 min
T 1/2 Exp     = 9.9 min

Response time = 3.7 min
T 1/2 Raw     - 2.3 min
T 1/2 Linear  = 5.8 min
T 1/2 Exp     - 5.7 min

Response time - 5.2 min

T 1/2 Linear  - 51.3 min
T 1/2 Exp     - 68.5 min
```


Lt
Posterior
Rt
1 min
5 min.
10 min.
15 min.

26. A 36-year-old man with a T10 spinal cord injury has chronic, asymptomatic bacteriuria unresponsive to antimicrobial therapy. He is managed by CIC obtaining volumes up to 400 ml. Cystometry demonstrates detrusor areflexia with high bladder compliance. A renal ultrasound is normal except for a 4 mm calculus in the left renal parenchyma. The best method of management is:

A. reassurance.
B. localizing urine cultures.
C. urinary acidification.
D. SWL.
E. sphincterotomy and condom catheter drainage.

27. A patient has stress urinary incontinence one year after radical retropubic prostatectomy. However, stress incontinence observed on physical examination is not documented during a Valsalva maneuver under fluoroscopy. The test was performed using a 12 Fr urethral catheter at a volume of 200 ml. The most likely explanation for the absence of demonstrable incontinence during the urodynamic test is:

A. insufficient volume instilled.
B. urethral catheter is too large.
C. involuntary bladder contraction.
D. poor Valsalva effort.
E. impaired contractility.

28. The most appropriate perioperative management of a patient undergoing adrenalectomy for Cushing's syndrome is:

A. hydration, alpha-blockers, and stress-dose steroids.
B. beta-blockers, stress-dose steroids and careful glycemic control.
C. potassium sparing diuretics and stress-dose steroids.
D. stress-dose steroids and careful glycemic control.
E. potassium sparing diuretics, stress-dose steroids, and careful glycemic control.

29. In chronic ureteral obstruction, the glomerular filtrate exits the renal pelvis primarily by:

A. pyelosinus backflow.
B. pyelolymphatic backflow.
C. extravasation from the renal pelvis.
D. reabsorption from renal pelvis.
E. pyelovenous backflow.

30. A 47-year-old uncircumcised married man is diagnosed with high grade Ta squamous cell carcinoma of the foreskin. His wife should undergo:

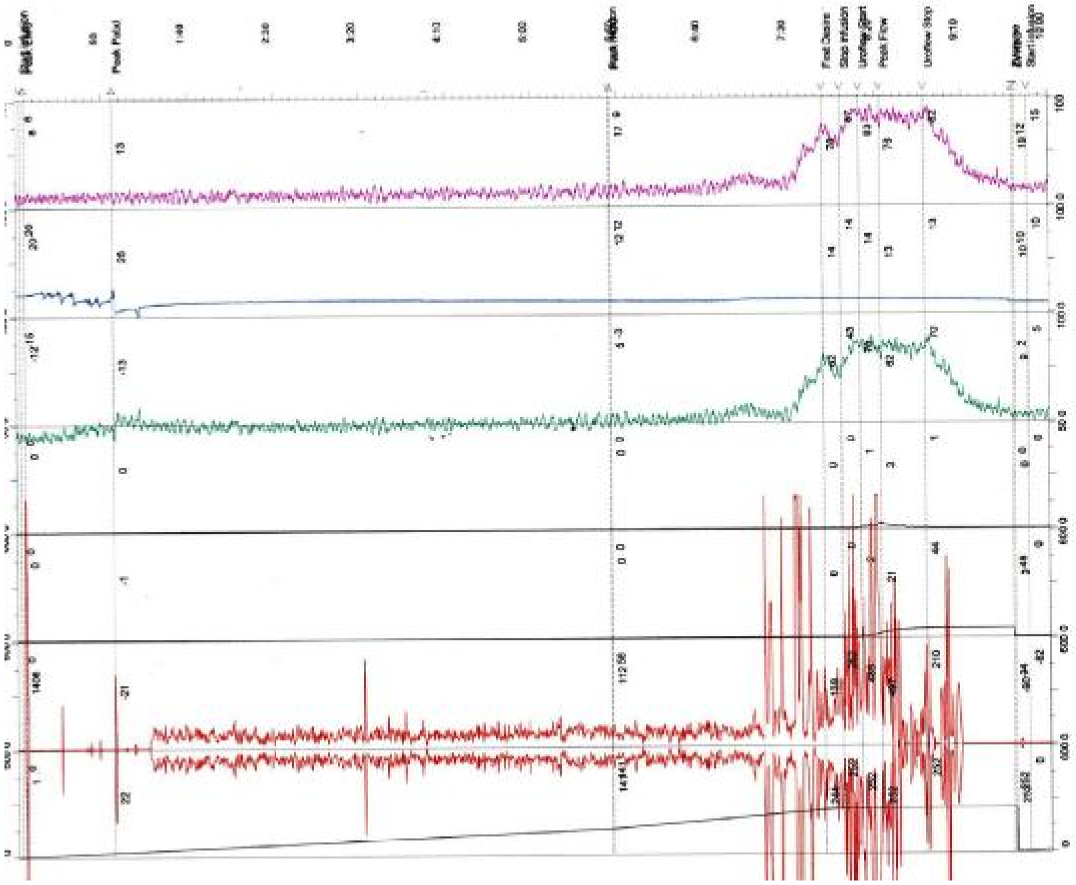
A. observation.
B. HPV vaccination.
C. Pap smear.
D. imiquimod therapy.
E. cervix biopsy.

31. A 36-year-old woman with cerebral palsy on CIC develops urgency, incontinence with severe perineal skin ulceration. Urodynamics show a 200 ml capacity bladder with overactive contractions and no stress urinary incontinence. She has failed antimuscarinics. Due to her body habitus, CIC is difficult per urethra. The best management is:

A. detrusor myomectomy.
B. ileal conduit.
C. Indiana pouch.
D. bladder augmentation with catheterizable abdominal channel.
E. bladder augmentation with fascial sling.

32. A 47-year-old man with relapsing remitting multiple sclerosis has severe urinary frequency and incontinence. He has been treated with tamsulosin for six months with no improvement in his symptoms. Examination reveals a 40 gm smooth prostate. CMG, pressure-flow study is shown. The next step is:

A. renal ultrasound.
B. videourodynamics.
C. MRI scan of the spine.
D. TRUS.
E. cystoscopy.



33. A four-year-old boy with a PUV has a vesicostomy. Serum creatinine is 0.6 mg/dl. Ultrasound shows minimal hydronephrosis. Videourodynamics show a bladder capacity of 30 cc with a pressure of 14 cm H_2O when leakage occurs from the vesicostomy with no reflux. Undiversion is considered. The best management is resection of the posterior urethral valves and:

A. ileal augmentation cystoplasty.
B. ileal augmentation with appendicovesicostomy.
C. bladder cycling via the vesicostomy.
D. primary closure of the vesicostomy.
E. autoaugmentation cystoplasty.

34. A 28-year-old man with Kallmann's syndrome is treated with hCG and FSH injections over two years. His serum testosterone and FSH levels are normal. His semen volume is 1.0 ml, sperm count is six million sperm/ml, and sperm motility is 90%. Well-timed sexual intercourse has not resulted in pregnancy for his wife, whose evaluation is normal. The next step is:

A. intrauterine insemination.
B. color Doppler scrotal ultrasound.
C. ICSI.
D. transrectal ultrasound.
E. testis biopsy.

35. The upper ureter is more susceptible to serious injury during endourological procedures because it:

A. is less distensible.
B. has thin suburothelium.
C. has thin muscularis.
D. has thin urothelium.
E. has variable blood supply.

36. A 74-year-old man has a 2 cm lower pole renal mass that enhances on CT scan. His medical history includes hypertension, congestive heart failure, and renal insufficiency with a creatinine of 1.8 mg/dl. The next step is:

A. renal mass biopsy.
B. cryoablation.
C. radiofrequency ablation.
D. partial nephrectomy.
E. radical nephrectomy.

37. An 82-year-old woman living in a nursing home has urinary urgency and urge incontinence. Neurologic examination is normal. Urinalysis is normal. Residual urine is 140 ml after voiding 160 ml. The most likely etiology of her symptoms is:

A. detrusor overactivity.
B. detrusor sphincter dyssynergia.
C. decreased detrusor compliance.
D. detrusor overactivity with impaired contractility.
E. intrinsic sphincter deficiency.

38. A 28-year-old woman in her third trimester of pregnancy has a cervical culture positive for Neisseria gonorrhoeae. She developed a skin rash and urticaria after taking penicillin previously. A skin test for penicillin allergy is negative. The most appropriate treatment is:

A. procaine penicillin G.
B. tetracycline.
C. erythromycin.
D. ceftriaxone.
E. spectinomycin.

39. The maximum yearly whole-body exposure to radiation recommended by the National Council on Radiation Protection is:

A. 1 rem.
B. 5 rem.
C. 10 rem.
D. 50 rem.
E. 100 rem.

40. Administration of I.V. mannitol prior to renal artery occlusion for partial nephrectomy helps prevent tissue damage by:

A. increasing cellular pH.
B. preventing cellular edema.
C. inhibition of Na/K ATPase.
D. preventing lactic acidosis.
E. limiting intracellular calcium influx.

41. A 40-year-old man underwent a vasectomy ten years earlier. He undergoes vasoepididymostomy, and sperm are noted in the epididymis. Six months after this procedure, semen analysis reveals azoospermia. The next step is:

A. repeat vasoepididymostomy.
B. epididymal sperm aspiration and ICSI.
C. testis biopsy.
D. repeat semen analysis in three months.
E. donor insemination.

42. During a left laparoscopic pyeloplasty the inferior mesenteric artery is accidentally ligated. Blood supply to the left colon will be primarily maintained by:

A. left colic artery.
B. left colic artery and inferior hemorrhoidal arteries.
C. middle colic artery and superior hemorrhoidal arteries.
D. marginal artery and superior hemorrhoidal arteries.
E. middle colic and middle hemorrhoidal arteries.

43. Compared to primary penile prosthesis insertion, prosthesis revision is associated with an increased risk of:

A. infection.
B. mechanical failure.
C. erosion.
D. persistent penile pain.
E. hemorrhage.

44. A 62-year-old man undergoes a TURBT at the dome. Final pathology reveals muscle-invasive small cell carcinoma. Metastatic work-up is negative. The next step is:

A. restaging TURBT.
B. neoadjuvant cisplatin-based chemotherapy.
C. XRT.
D. partial cystectomy.
E. radical cystoprostatectomy.

45. Beta-lactamase inhibitors are useful for treating UTIs because they:

A. enhance entry of a second antimicrobial agent into bacteria.
B. protect a penicillinase-susceptible agent from hydrolysis.
C. are bactericidal.
D. are active against methicillin-resistant staphylococcus.
E. antagonize the bactericidal effect of penicillin-like drugs.

46. A 50-year-old man has a two year history of erectile dysfunction, urinary frequency, nocturia, and recurrent UTIs. Physical examination reveals an absent bulbocavernosus reflex and an enlarged prostate. Neurologic evaluation reveals decreased vibratory sensation in his hands and feet. A CMG shows 200 ml residual urine and first sensation at 400 ml. These findings are most consistent with:

A. multiple sclerosis.
B. Shy-Drager syndrome.
C. Parkinson's disease.
D. herpes zoster.
E. diabetes mellitus.

47. A 30-year-old woman sustains a complete transection of the left ureter at the level of L5 during removal of a large ovarian cyst. Preoperative CT scan was within normal limits. The most appropriate treatment is:

A. transureteroureterostomy.
B. ureteroureterostomy.
C. nephrostomy and delayed ureteral repair.
D. psoas hitch and ureteroneocystostomy.
E. Boari flap and ureteroneocystostomy.

48. A 65-year-old man undergoes a radical cystectomy with ileal neobladder reconstruction. On post-op day three, he has a mild abdominal distention and increased bilious output from his nasogastric tube. His urine output is slightly diminished but adequate. He is hemodynamically stable. His maintenance fluid is 0.45 NS at 85 cc/hr. His nasogastric tube output should be replaced with:

A. 0.45 NS.
B. 0.45 NS with 20 mEq/l KCl.
C. 0.45 NS with 30 mEq/l KCl.
D. 0.9 NS with 20 mEq/l KCl.
E. Lactated Ringer's.

49. A 63-year-old man has a temperature of 39^{o} C and fecaluria eight days after radical prostatectomy. A pelvic CT scan demonstrates a 5 by 4 cm heterogeneous peri-rectal fluid collection. He had received an oral bowel prep and antibiotics pre-operatively. The best management is parenteral antibiotics, percutaneous drainage of the fluid collection, and:

A. low-residual diet.
B. parenteral hyperalimentation.
C. suprapubic tube.
D. colostomy.
E. enteral hyperalimentation.

50. A 30-year-old woman complains of a vaginal discharge and odor. She has no itching, burning, or soreness. On physical examination, she has a malodorous, gray-yellow discharge. Microscopic examination of the discharge shows clue cells. A whiff test is positive. The etiology her vaginitis is:

A. Candida albicans.
B. Gardnerella vaginalis.
C. Trichomonas vaginalis.
D. Chlamydia trachomatis.
E. mucorrhea.

51. The most likely neurologic deficit following nerve injury at the time of laparoscopic varicocelectomy is:

A. numbness on the base of the penis and anterior scrotum.
B. numbness on the anterior thigh.
C. numbness on the lateral thigh.
D. inability to extend the knee.
E. inability to adduct the thigh.

52. A 54-year-old woman underwent radiation therapy for cervical cancer two years ago now has microscopic hematuria. TUR of a lesion 2 cm above the left ureteral orifice reveals an inverted papilloma. Three days post-operatively, she develops a vesicovaginal fistula. The best treatment is:

A. immediate transvaginal repair.
B. transvaginal repair in six months.
C. immediate transabdominal repair.
D. transabdominal repair in six months.
E. urinary diversion.

53. Primary hyperaldosteronism caused by bilateral adrenal hyperplasia is best managed by:

A. salt restriction.
B. spironolactone administration.
C. captopril administration.
D. unilateral adrenalectomy of the larger adrenal.
E. bilateral adrenalectomy.

54. A six-year-old boy has a history of a PUV treated with endoscopic resection. He now has worsening bilateral hydronephrosis and his serum creatinine has increased from 0.6 to 1.0 mg/dl over the past nine months. He is dry and has no voiding complaints. Videourodynamics reveal no reflux, near complete emptying without outflow obstruction and filling pressures of 20 cm H_20 at 220 ml and 32 cm H_20 at 280 ml. The initial plan should be:

A. voiding diary.
B. start oxybutynin.
C. start alpha-blocker.
D. nocturnal indwelling catheter.
E. initiate CIC every four hours.

55. A 42-year-old woman has a slow rise in serum creatinine from 1.2 to 2.0 mg/dl one year after uneventful live donor transplantation. Ultrasound shows significant hydronephrosis and no perinephric fluid collection. The next step is:

A. CT scan.
B. MAG-3 renal scan.
C. VCUG.
D. retrograde ureterogram.
E. renal allograft biopsy.

56. The urine sample that should be collected for pH testing to establish the diagnosis of RTA is:

A. fasting.
B. postprandial.
C. diurnal.
D. nocturnal.
E. hydrated.

57. A six-year-old girl has a palpable abdominal mass. CT scan demonstrates a 5 cm mass in the lower pole of the left kidney and a 2 cm lesion in the upper pole of the right kidney. Biopsy of the left renal mass shows Wilms' tumor. The next step is:

A. chemotherapy.
B. chemotherapy and XRT.
C. bilateral partial nephrectomies.
D. left radical nephrectomy and right partial nephrectomy.
E. left radical nephrectomy and chemotherapy.

58. A 28-year-old paraplegic man had a sphincterotomy seven years ago and wears a condom catheter. During an evaluation for renal insufficiency, renal ultrasonography reveals bilateral hydroureteronephrosis. The parameter or study most predictive of this complication is:

A. EMG.
B. CMG.
C. Valsalva LPP.
D. detrusor LPP.
E. urethral pressure profilometry.

59. An oligospermic man who takes 25 mg of clomiphene citrate a day will usually have a:

A. low serum LH.
B. low serum FSH.
C. low serum estradiol.
D. high serum testosterone.
E. high prolactin.

60. An eight-year-old girl has urinary urgency, urge incontinence, and constant leakage of urine between voids. She is started on timed voiding and has improvement with the urge incontinence but still has constant urinary leakage. An ultrasound does not show any evidence of hydronephrosis or bladder wall thickening. The next study that will most definitively diagnose her problem is:

A. MRI scan of the abdomen.
B. MRI scan of the spine.
C. VCUG.
D. videourodynamics.
E. MAG-3 renal scan.

61. Stage III prolapse in the Pelvic Organ Prolapse Quantification (POPQ) system occurs when the most distal portion of the prolapse is:

A. 1 cm or less proximal or distal to the hymenal plane.
B. 1 cm or less proximal or distal to the introitus.
C. > 1 cm below the hymen; entire vagina has not prolapsed.
D. > 1 cm below the introitus; entire vagina has not prolapsed.
E. associated with complete vaginal eversion.

62. A 45-year-old man with congestive heart failure develops epididymitis. His current medications include digoxin, enalapril and amiodarone. The next step in management is:

A. administer ciprofloxacin.
B. discontinue enalapril.
C. discontinue amiodarone.
D. discontinue digoxin.
E. administer doxycycline.

63. A 40-year-old woman has chronic renal insufficiency and a creatinine of 2.5 mg/dl. The medication that will increase the serum creatinine but not alter the true GFR is:

A. captopril.
B. cimetidine.
C. trimethoprim.
D. spironolactone.
E. cisplatin.

64. A 32-year old spinal cord injured man undergoes cystoscopy using local anesthesia and I.V. sedation. The symptom complex most indicative of autonomic dysreflexia is:

A. hypertension, bradycardia, facial flushing.
B. hypertension, tachycardia, diaphoresis.
C. hypertension, tachycardia, facial flushing.
D. hypotension, bradycardia, pallor.
E. hypotension, tachycardia, diaphoresis.

65. A 42-year-old man with azoospermia and primary infertility has an FSH of 15 IU/l, small volume testes, and an otherwise normal physical examination. The factor that most reliability predicts his ability to have a biologic child is:

A. vasography.
B. serum FSH.
C. wife's fertility.
D. testicular volume.
E. testicular biopsy.

66. A 25-year-old man had an ileal bladder augmentation at age six years. He now has anorexia, weight loss, polydipsia, and lethargy. Serum electrolyte results are: sodium 136 mEq/l, potassium 4.2 mEq/l, chloride 114 mEq/l, and bicarbonate 14 mEq/l. The next steps are hydration and:

A. chlorpromazine.
B. potassium citrate.
C. sodium chloride.
D. cimetidine.
E. omeprazole.

67. A 28-year-old woman with newly diagnosed hypertension has a 1.8 cm partially calcified right renal artery aneurysm. Appropriate long-term management is:

A. sodium restriction.
B. weight loss.
C. thiazide diuretic.
D. selective embolization.
E. surgical repair.

68. A promoter of urinary stone crystallization is:

A. glycosaminoglycans.
B. bikunin.
C. magnesium.
D. matrix.
E. pyrophosphate.

69. A 15-year-old boy presents with a 22-caliber gunshot wound to the left flank. Evaluation reveals an entrance wound posterior to left anterior axillary line, no exit wound seen. Vital signs are stable and there is no sign of peritoneal irritation. CT scan reveals a grade 2 left renal injury, right kidney within normal limits, no air is noted in the peritoneal cavity; no associated organ injuries are noted. Distal ureters are intact bilaterally. The next step is initiate intravenous antibiotics and:

A. observation.
B. retrograde ureteropyelogram.
C. intravenous indigo carmine and local exploration of wound.
D. retroperitoneal exploration and renorrhaphy alone.
E. exploratory laparotomy, retroperitoneal exploration and renorrhaphy.

70. A 26-year-old man with neurofibromatosis develops hypertension two years after excision of a benign cerebellar hemangioma. The most likely cause is:

A. primary hyperaldosteronism.
B. adrenal cortical carcinoma.
C. renal artery stenosis.
D. juxtaglomerular cell tumor.
E. diabetes insipidus.

71. Inhibin is a substance derived from the testicle which mediates secretion of:

A. testosterone.
B. FSH.
C. LH.
D. GnRH.
E. Müllerian inhibiting factor.

72. A 15-year-old girl paraplegic athlete has qualified for the Para Olympics. Her overactive neurogenic bladder has been well-controlled with oxybutynin XL 10 mg bid. She has recently become intolerant of antimuscarinic medication due to severe heat intolerance induced with training. Without antimuscarinic medication, she has uncontrollable urinary incontinence. With the Olympics only seven weeks away, you recommend:

A. intravesical instillations of oxybutynin.
B. intravesical instillation of resiniferatoxin.
C. intravesical injection of botulinum A toxin.
D. placement of a sacral nerve stimulator.
E. transcutaneous neural modulation.

73. A 59-year-old woman with microscopic hematuria and a 70 pack per year smoking history has an abnormal cytology. Cystoscopy is negative. The best upper tract imaging modality is:

A. sonography.
B. intravenous urography.
C. CT urography.
D. MRI urography.
E. retrograde urography.

74. The factor most responsible for ureteral dilation during pregnancy is:

A. mechanical compression by the uterus.
B. elevated estradiol levels.
C. elevated progestin levels.
D. placental hormones.
E. increased urine flow.

75. A 37-year-old woman with diuretic induced hypokalemia has an elevated 24-hour urinary aldosterone level after a period of salt loading. The initial study for localization of her condition is:

A. MIBG scan.
B. CT scan.
C. ultrasound.
D. iodocholesterol scan.
E. adrenal venography.

76. A 52-year-old woman with overactive bladder and incontinence is prescribed oxybutynin XL 5 mg daily. She returns somewhat improved after four weeks of therapy but has persistent bothersome urinary symptoms without adverse drug side effects. PVR is minimal and her urinalysis is negative. The next step is:

A. increase dose of oxybutynin.
B. discontinue oxybutynin and start tolterodine.
C. add imipramine.
D. cystoscopy.
E. sacral neuromodulation.

77. The primary advantage of using frozen semen rather than fresh semen for in vitro fertilization with donor sperm is:

A. improved implantation rates.
B. improvement in embryonic vitality scores.
C. increased number of cryopreservable spare embryos.
D. decreased risk of HIV transmission.
E. decreased number of insemination cycles required to achieve a pregnancy.

78. A 12-year-old boy who has previously undergone an ileal augmentation catheterizes every four hours but develops recurrent bladder calculi. The most effective way to diminish recurrence is:

A. restrict dietary sodium.
B. potassium citrate.
C. daily bladder irrigation.
D. increase frequency of catheterization.
E. antibiotic prophylaxis.

79. A 66-year-old man, two years post-radical prostatectomy, seeks advice about therapy of severe urinary incontinence and complete erectile dysfunction. Both conditions are non-responsive to medical therapy. The next step is:

A. wait one year before definitive treatment.
B. artificial urinary sphincter first and a penile prosthesis at a later date.
C. penile prosthesis first and an artificial urinary sphincter at a later date.
D. penile prosthesis first and a male sling at a later date.
E. synchronous insertion of an artificial urinary sphincter and penile prosthesis.

80. A 57-year-old woman on hemodialysis for ten years has gross hematuria and mild right flank pain. Urine cytology and culture are negative. CT scan reveals small kidneys bilaterally with multiple cysts. Cystoscopy reveals bloody efflux from the right ureteral orifice, clear efflux from the left orifice, and normal bladder urothelium. The next step is:

A. antibiotic therapy.
B. angioinfarction of the right kidney.
C. right nephrectomy.
D. needle biopsy of kidney.
E. repeat CT scan in six months.

81. A ten-year-old girl with spina bifida has new onset of urinary incontinence. She had previously undergone sigmoid augmentation cystoplasty and bladder neck reconstruction. Renal ultrasound is normal. She performs CIC every four hours and is on oxybutynin 5 mg qid. A urodynamic study reveals detrusor overactivity with peak pressures of 60 cm H_20 starting at a bladder volume of 100 ml. The next step is:

A. increase oral oxybutynin.
B. intravesical oxybutynin.
C. oral loperamide.
D. bulking agent injection of bladder neck.
E. reaugment bladder using ileum.

82. A man with erectile dysfunction, diabetes, and an associated autonomic neuropathy complains of debilitating diplopia with sildenafil despite obtaining an excellent erectile response. He should be advised to discontinue sildenafil and:

A. seek an ophthalmologic consultation.
B. use intracavernosal injections.
C. use an intra-urethral suppository.
D. use vardenafil.
E. use tadalafil.

83. Stress-related cortisol production comes from the:

A. zona glomerulosa.
B. zona fasciculata.
C. zona reticularis.
D. entire adrenal cortex.
E. adrenal medulla.

84. Thirty days following treatment of a pyoderma, a five-year-old girl has hematuria, edema, hypertension, and oliguria. Her microscopic urine assessment shows dysmorphic RBCs and RBC casts. Her diagnosis would be confirmed by:

A. mesangial deposits of IgA.
B. anti-glomerular basement membrane antibodies.
C. elevated complement C3 and C4.
D. elevated anti-neutrophil cytoplasmic antibodies (ANCA).
E. elevated antistreptolysin-O (ASO) and a decreased complement C3.

85. A 76-year-old healthy woman with nocturnal polyuria is prescribed DDAVP. Hyponatremia may result from:

A. increased sodium excretion.
B. increased urea reabsorption.
C. decreased potassium excretion.
D. decreased luminal aquaporin channels in the collecting duct.
E. decreased effective circulating volume.

86. Pheochromocytomas that occur in association with the multiple endocrine adenoma (MEA) syndromes differ from sporadic pheochromocytomas in that:

A. bilateral occurrence is more common.
B. paroxysmal attacks occur more frequently.
C. extra-adrenal sites are more common.
D. hypertension is more severe.
E. secretion of norepinephrine alone is more common.

87. A 40-year-old man has hypertension treated with enalapril and furosemide. He develops muscular weakness, headaches, and polydipsia. Laboratory evaluation reveals hypokalemic alkalosis. Furosemide is discontinued but the hypokalemia persists and supplemental potassium is given. The next step is:

A. saline suppression test.
B. posture stimulation test.
C. aldosterone to renin ratio.
D. discontinue enalapril.
E. adrenal CT scan.

88. The primary goal in the treatment of premature ejaculation is:

A. intra-vaginal ejaculatory latency > 1 minute.
B. intra-vaginal ejaculatory latency > 3 minutes.
C. intra-vaginal ejaculatory latency > 5 minutes.
D. improved self-perception of ejaculatory control.
E. improved patient and partner satisfaction.

89. A 75-year-old man undergoes a TURP for obstructive voiding symptoms. He was treated three years ago with six weeks of intravesical BCG therapy for a noninvasive urothelial carcinoma of the bladder, and has not had any tumor recurrence. The TUR specimen reveals BPH and urothelial CIS of the prostatic urethra. There is no evidence of ductal or stromal invasion. The most appropriate management is:

A. repeat BCG therapy.
B. mitomycin C therapy.
C. repeat TURP.
D. cystoscopy and cytology in three months.
E. radical cystoprostatectomy and urethrectomy.

90. The antibiotic that can be given during any trimester of pregnancy without harm to the fetus is:

A. trimethoprim/sulfamethoxazole.
B. gentamicin.
C. nitrofurantoin.
D. cephalexin.
E. ciprofloxacin.

91. During videourodynamics in a patient with a history of a T8 spinal cord injury, detrusor external sphincter dyssynergia is characterized by simultaneous:

A. increased EMG activity, detrusor underactivity, and narrowing of the prostatic urethra.
B. increased EMG activity, detrusor overactivity, and narrowing of the membranous urethra.
C. decreased EMG activity, detrusor overactivity, and dilation of the prostatic urethra.
D. decreased EMG activity, detrusor underactivity, and narrowing of the membranous urethra.
E. decreased EMG activity, detrusor underactivity, and dilation of the prostatic urethra.

92. A 76-year-old man with diabetes has hematuria. CT urogram shows a 5 mm filling defect in the distal right ureter. Ureteroscopic biopsy reveals a low grade, noninvasive urothelial carcinoma. The best treatment is:

A. nephroureterectomy.
B. ureteral stent and intravesical BCG.
C. segmental resection and ureteroureterostomy.
D. ureteroscopic tumor ablation.
E. distal ureterectomy and reimplantation.

93. The major site of action of aldosterone in the kidney is the:

A. proximal tubule.
B. juxtaglomerular apparatus.
C. ascending portion of Henle's loop.
D. collecting duct.
E. distal tubule.

94. The role of T cells in tumor immune response includes:

A. little role in tumor rejection.
B. expression of granules and perforins.
C. suppression of apoptosis.
D. down regulation of Fas ligand.
E. elaboration of interferon gamma to effect natural killer cells.

95. A 60-year-old man has a grade 3, T1 urothelial carcinoma of the bladder. He receives the fifth of six weekly instillations of intravesical BCG. Twelve hours later, he has a temperature of 39.5^{o} C, difficulty breathing, and hypotension. The most likely cause of this complication is:

A. reflux of BCG into the upper tracts.
B. acute UTI.
C. traumatic catheterization.
D. more virulent strain of BCG.
E. impaired immunological state.

96. A ten-year-old boy with precocious puberty has bilateral nodular testes. Testicular ultrasound reveals multiple bilateral solid masses. The serum 17-hydroxyprogesterone is elevated and the karyotype is 46 XY. The next step is:

A. cranial MRI scan.
B. abdominal CT scan.
C. testicular biopsy.
D. bilateral orchiectomy.
E. corticosteroids.

97. A 52-year-old woman underwent a percutaneous needle biopsy of the right kidney. Two months later, an abdominal bruit is heard in the right upper quadrant and a renal arteriogram demonstrates an arterio-venous fistula in the lower pole of the right kidney. She is asymptomatic with blood pressure well-controlled by medication and has a serum creatinine of 1.4 mg/dl. The next step is:

A. observation.
B. selective embolization.
C. partial nephrectomy.
D. operative ligation.
E. complete nephrectomy.

98. An asymptomatic 62-year-old man has an isolated 3.5 cm biopsy proven local recurrence in the right renal fossa four years after a right radical nephrectomy for a localized (T3a NoMo) RCC. The metastatic evaluation is otherwise negative. The best management is:

A. immunotherapy.
B. radiation therapy.
C. VEGF inhibitor.
D. surgical excision.
E. tyrosine kinase inhibitor.

99. An eight-year-old boy is an unrestrained passenger in a MVC. He complains of left abdominal pain and has left upper quadrant tenderness on physical examination. He is hemodynamically stable and has microscopic hematuria. CT scan shows a normal right kidney. The left kidney is markedly hydronephrotic and there is perinephric contrast extravasation. The left ureter is not visualized. The next step is:

A. observation and antibiotics.
B. renal scan.
C. retrograde pyelogram.
D. percutaneous nephrostomy.
E. renal exploration.

100. An 82-year-old man has troublesome nocturia. He has hypertension, atrial fibrillation, and glaucoma. He takes diltiazem, digoxin, atorvastatin, tamsulosin, and eye drops. On exam, he has peripheral edema. Baseline creatinine is 1.2 mg/dl and serum sodium is 136 mEq/l. A relative contraindication to the use of desmopressin in him is his:

A. concurrent medications.
B. history of glaucoma.
C. peripheral edema.
D. atrial fibrillation.
E. hypertension.

101. A 19-year-old man has headaches, polydipsia, and polyuria. He has hypokalemia and an elevated peripheral vein renin. Abdominal CT scan demonstrates a 2 cm mass adjacent to or involving the upper pole of the right kidney; the left kidney is normal. The most likely diagnosis is:

A. adrenal cortical carcinoma.
B. juxtaglomerular cell tumor.
C. pheochromocytoma.
D. renal cell carcinoma.
E. aldosteronoma.

102. A 47-year-old calcium oxalate stone former wishes to go on a high animal protein, low carbohydrate, weight loss diet. The following changes in urinary chemistries are expected:

	Calcium	**Uric Acid**	**Citrate**	**pH**
A.	↑	↑	↓	↑
B.	↑	↑	↓	↓
C.	↑	↓	↑	↓
D.	↓	↓	↓	↑
E.	↓	↑	↓	↓

103. A 37-year-old man with HIV and ESRD is being evaluated for a living donor kidney transplant from his sister. A possible contraindication to transplantation is:

A. HIV infection.
B. CD4 counts < 100.
C. detectable HIV viral load.
D. concomitant administration of immunosuppressive agents.
E. co-infection with hepatitis C virus.

104. The chemotherapeutic agent that may be associated with increased absorption with continent diversion is:

A. methotrexate.
B. 5-fluorouracil.
C. vincristine.
D. cisplatin.
E. Adriamycin.

105. While performing a videourodynamic study in a three-year-old child, the recommended rate of bladder filling is:

A. 10 ml/min.
B. 20 ml/min.
C. 30 ml/min.
D. 40 ml/min.
E. 50 ml/min.

106. A 32-year-old man has persistent penile pain three months after implantation of an inflatable penile prosthesis. Exam demonstrates no evidence of infection and a sigmoid deformity of the shaft with a cylinder palpable under the skin. The best treatment is:

A. six weeks of oral antibiotics.
B. six weeks of I.V. antibiotics.
C. removal of prosthesis.
D. downsizing of cylinders.
E. patch graft to tunical albuginea.

107. A 54-year-old woman undergoes an ileocecal pouch cutaneous urinary diversion two years after pelvic radiation for cervical cancer. Four months later, she has right lower quadrant pain and fecaluria. A pouchogram reveals contrast extending into the colon adjacent to the pouch. The next step is:

A. hyperalimentation.
B. bilateral nephrostomy drainage.
C. pouch endoscopy and fulguration of fistula.
D. catheter drainage and low residue diet.
E. colonoscopy.

108. Ultrasound of a 28-week-old fetus demonstrates normal kidneys and amniotic fluid. The bladder is not visualized on several ultrasounds. The most likely explanation is:

A. persistent cloaca.
B. bilateral ectopic ureters.
C. maternal dehydration.
D. bladder exstrophy.
E. patent urachus.

109. A 32-year-old man has painful ischemic priapism lasting 36 hours and undergoes a unilateral cavernosal glanular shunt (T-shunt). In the operating room he becomes flaccid but his erection recurs within ten minutes. The next step is:

A. observation and pain management.
B. irrigate with phenylephrine.
C. contralateral T-shunt.
D. cavernosal-spongiosal shunt.
E. cavernosal-saphenous vein shunt.

110. A 32-year-old man has clinical stage I seminoma of the left testis. At the time of radical orchiectomy, he undergoes a right testis biopsy because the right testis is atrophic. Biopsy of the right testis demonstrates testicular intra-epithelial neoplasia (CIS). The next step is 20 Gy to the retroperitoneum and:

A. right orchiectomy and androgen replacement.
B. platinum-based chemotherapy.
C. low-dose XRT to the right testis.
D. serial testicular ultrasounds.
E. repeat testis biopsy in six months.

111. A seven-year-old girl has daytime incontinence that is not associated with infection. She has marked constipation and encopresis. Her physical examination reveals a normal appearing spine, and a normal neurologic examination. Her bladder is not percussible, and urinalysis is normal. The next step is timed voiding and:

A. spinal MRI scan.
B. VCUG.
C. urodynamic evaluation.
D. oxybutynin.
E. bowel management.

112. A 47-year-old woman underwent closure of a bladder laceration at the time of an abdominal hysterectomy. Because of persistent leaking for two months, a transvaginal vesicovaginal fistula repair was required. Leaking recurs after another five months and a vaginal cuff fistula is found. CT urogram is normal and cystoscopy reveals a 1 cm fistulous tract with patchy, raised edema. The next step is:

A. serial cystoscopy and repair when edema resolves.
B. cystoscopy and biopsy of fistulous tract.
C. injection of fistula tract with fibrin sealant.
D. immediate vaginal repair with Martius flap.
E. immediate abdominal repair with omental interposition.

113. A 52-year-old man on steroids for rheumatoid arthritis has a solitary, 2.0 cm, high-grade urothelial carcinoma on the posterior bladder wall with focal invasion of the lamina propria. The best management is:

A. intravesical BCG.
B. intravesical BCG with interferon.
C. intravesical mitomycin C.
D. partial cystectomy.
E. radical cystectomy.

114. A two-month-old boy has a 4 cm right adrenal mass. Biopsy reveals neuroblastoma. There are metastases to the skin, liver. and bone marrow. Skeletal survey is negative. The next step is:

A. observation.
B. flank irradiation.
C. multi-agent chemotherapy.
D. right adrenalectomy.
E. total body irradiation and bone marrow transplant.

115. A decrease in renal injury with SWL can be accomplished by:

A. starting at a low energy setting.
B. starting at a low energy setting and pausing for 3-4 minutes before increasing the energy setting.
C. increasing the shockwave firing rate.
D. increasing the shockwave firing rate and starting at a low energy setting.
E. starting at a slow shockwave firing rate and pausing for 3-4 minutes before increasing the shockwave firing rate.

116. An increased risk of postoperative urinary retention following interstitial brachytherapy is associated with a:

A. prostate volume of 25 gm.
B. Gleason score 8-10.
C. preoperative hormonal deprivation therapy.
D. preoperative postvoid residual of 125 ml.
E. preoperative AUA Symptom Score 18.

117. A six-year-old girl has a pelvic fracture from a MVC. Her perineal examination shows blood at the vaginal introitus. A CT scan with contrast shows normal kidneys and a pelvic hematoma. The next step is:

A. urethral catheter.
B. VCUG.
C. retrograde urethrogram.
D. cystoscopy, vaginoscopy and cystogram.
E. suprapubic tube bladder drainage.

118. The threshold for hematuria that merits further evaluation is:

A. urine dipstick positive for hemoglobin.
B. at least 1 RBC/hpf.
C. 3 or more RBC/hpf.
D. > 10 RBC/hpf.
E. gross hematuria.

119. A 55-year-old obese man undergoes a radical cystoprostatectomy. A Mainz pouch (cecum-terminal ileum neobladder) is performed, but the pouch will not reach to the urethral stump due to mesenteric tension. The next step is:

A. divide the ileocolic artery.
B. divide the right colic artery.
C. divide the middle colic artery.
D. convert to a continent cutaneous diversion.
E. create an ileal loop conduit.

120. Paternity potential in males with spina bifida correlates positively with:

A. serum testosterone level.
B. sacral neurologic level of lesion.
C. reflexogenic erections.
D. shunt-dependent hydrocephalus.
E. glans penis sensation.

121. The lithotriptor generator with the largest focal zone is:

A. electrohydraulic.
B. piezoelectric.
C. electromagnetic.
D. microexplosive.
E. electroconductive.

122. A 58-year-old man is to undergo TUR and immediate postoperative instillation of 40 mg Mitomycin C for recurrent low grade multifocal Ta urothelial carcinoma of the bladder. At the time of resection, a 2-3 cm region of perivesical fat is seen in the resection bed. The next step is:

A. administer Mitomycin C.
B. administer Mitomycin C, leave indwelling catheter.
C. withhold Mitomycin C, leave indwelling catheter.
D. administer Adriamycin, leave indwelling catheter.
E. wait 48 hours, administer Mitomycin C.

123. A three-month-old boy underwent left dismembered pyeloplasty. An ultrasound nine months postoperatively demonstrates worsening hydronephrosis and severe cortical thinning. A renal scan demonstrates the left kidney to contribute 22% of total renal function, and T1/2 > 40 minutes. Retrograde pyelography demonstrates a 2 cm stricture at the anastomosis and an intrarenal pelvis. The next step is:

A. retrograde endopyelotomy.
B. antegrade endopyelotomy.
C. repeat dismembered pyeloplasty.
D. ureterocalicostomy.
E. nephrectomy.

124. Roux-en-Y gastric bypass increases the risk of kidney stones by which change in the urine:

A. increased oxalate and decreased citrate.
B. increased oxalate and increased calcium.
C. decreased volume and increased calcium.
D. decreased volume and increased sodium.
E. decreased citrate and increased sodium.

125. The most common adverse event associated with sorafenib in the treatment of metastatic RCC is:

A. hand-foot skin reactions.
B. cardiac ischemia.
C. hemorrhage.
D. neuropathy.
E. joint pain.

126. When obtaining percutaneous access to a continent urinary reservoir for removal of calculi, the most important factor to consider is:

A. stone composition.
B. stone volume.
C. stone number.
D. adjacent structures.
E. type of diversion.

127. The benefit of hypertonic saline resuscitation after severe multitrauma is due to:

A. reduced inflammatory response.
B. reduced acidosis.
C. inhibited angiotensin II release.
D. restored intravascular volume.
E. repleted third space fluid loss.

128. A 35-year-old alcoholic man with renal insufficiency undergoes a left radical orchiectomy for a NSGCT. His preoperative AFP was 100 IU/ml and beta-hCG was 85 mIU/ml. Two weeks later, AFP is 2 IU/ml and beta-hCG is 15 mIU/ml. His metastatic evaluation is otherwise negative. The most likely explanation for the marker elevation is:

A. hepatic dysfunction.
B. renal insufficiency.
C. hypogonadism.
D. normal marker decline.
E. residual yolk sac elements.

129. A six-year-old boy with nocturnal enuresis has been treated with imipramine. He took an excessive dose last night and is lethargic this morning. The best plan is:

A. observation.
B. cardiac monitoring.
C. Kayexalate enema.
D. hemodialysis.
E. atropine.

130. Acetohydroxamic acid:

A. is a urease inhibitor.
B. reduces urinary oxalate.
C. is a calcium chelating agent.
D. converts cystine to cysteine.
E. converts glycoxalate to glycine.

131. A 60-year-old man has a rising PSA following external beam radiotherapy for prostate cancer. His PSA nadir is 0.5 ng/ml, and 1.1 ng/ml and 1.6 ng/ml at 12 and 18 months, respectively. The next step is:

A. observation.
B. prostate biopsy.
C. lymph node dissection.
D. salvage cryoablation.
E. hormonal ablation.

132. An eight-year-old boy has persistent urinary incontinence following newborn resection of a PUV. This is most likely due to:

A. detrusor instability.
B. vesicoureteral reflux.
C. non-compliant bladder.
D. incompetent bladder neck.
E. damaged external urethral sphincter.

133. A 42-year-old woman is undergoing a laparoscopic hysterectomy for dysmenorrhea and menorrhagia. An inadvertent 3 cm cystotomy is made at the level of the vaginal cuff. A urological consult is requested after the uterus is removed. In addition to repair, it is best to:

A. use a flap interposition.
B. place suprapubic tube.
C. perform cystoscopy.
D. perform bilateral retrograde pyeloureterograms.
E. utilize an open approach.

134. When performing a 7.5 MHz transrectal ultrasound on a 125 gm prostate, better imaging of the anterior transition zone may be achieved by:

A. decreasing gain.
B. increasing frequency.
C. decreasing frequency.
D. utilizing color Doppler.
E. utilizing power Doppler.

135. The posterior surface of the kidney is adjacent to the:

A. quadratus lumborum muscle and diaphragm.
B. psoas and latissimus dorsi muscles.
C. diaphragm and psoas muscle.
D. transversus abdominis and psoas muscles.
E. paraspinous and intercostal muscles.

136. A 32-year-old HIV positive man has right epididymitis. The next steps are urethral swab for Gram stain and culture or urine PCR, empiric therapy and:

A. syphilis serology.
B. hepatitis B serology.
C. hepatitis C serology.
D. percutaneous epididymal biopsy.
E. culture of expressed prostatic secretions.

137. A 50-year-old man undergoes a radical orchiectomy, and is reported to have a pure seminoma. Serum beta-hCG is 342 mIU/ml, and AFP is 123 IU/ml prior to orchiectomy. CT scan reveals a 7 cm para-aortic mass. After four cycles of chemotherapy, the para-aortic mass is 1.8 cm and serum markers are normal. The next step is:

A. observation.
B. retroperitoneal radiation.
C. additional chemotherapy.
D. RPLND.
E. positron emission tomography (PET) scan.

138. A two-year-old girl has a febrile UTI. An ultrasound is normal, but a VCUG demonstrates left grade 4 VUR. There is a compound upper pole calyx and simple calyces throughout the rest of the kidney. A DMSA scan of the left kidney at one week and nine months after the infection would most likely show:

	One Week	**Nine Months**
A.	normal	normal
B.	normal	upper pole defect
C.	upper pole defect	upper pole defect
D.	multiple defects	normal
E.	multiple defects	multiple defect

139. A 72-year-old man with localized prostate cancer and diabetes mellitus takes an oral hypoglycemic as his only medication. He has a chronic serum creatinine of 2.1 mg/dl, with a normal upper tract on renal ultrasound, and a normal urinalysis. Which medication, if any, should be started prior to robotic radical prostatectomy:

A. none.
B. captopril 50 mg po bid.
C. enoxaparin 40 mg subcutaneous qd.
D. metoprolol 50 mg po bid.
E. ciprofloxacin 500 mg po bid.

140. During surveillance of a 2.3 cm solid renal mass, the most reliable indicator of malignancy on imaging is:

A. T2 hyperintensity.
B. growth rate.
C. calcification.
D. location.
E. absence of fat.

141. A ten-year-old boy has a perineal "butterfly" hematoma following a straddle injury. This suggests rupture of the:

A. tunica albuginea.
B. corpus spongiosum.
C. corpus cavernosum.
D. posterior urethra.
E. Colles' fascia.

142. Contrast-induced nephropathy in patients with renal insufficiency is best prevented by:

A. N-acetylcysteine.
B. natriuretic hormone.
C. hydration.
D. furosemide.
E. endothelin antagonist.

143. A 67-year-old man undergoes TURBT for a large muscle-invasive bladder tumor along the trigone. Physical exam reveals a large, fixed bladder mass. CT scan reveals no lymphadenopathy, but severe bilateral hydroureteronephrosis is present. His serum creatinine is 2.5 mg/dl following placement of bilateral percutaneous nephrostomy tubes. The next step is:

A. carboplatin-based chemotherapy and XRT.
B. neoadjuvant cisplatin-based chemotherapy.
C. neoadjuvant carboplatin-based chemotherapy.
D. radical cystectomy.
E. radical cystectomy and adjuvant cisplatin-based chemotherapy.

144. A 52-year-old man has lethargy and weakness. His serum laboratory values are: sodium 115 mEq/l, potassium 4.5 mEq/l, chloride 80 mEq/l, bicarbonate 23 mEq/l, BUN 8 mg/dl, creatinine 0.8 mg/dl, uric acid 2.9 mg/dl (normal 3.6 - 8.5 mg/dl). The most likely diagnosis is:

A. Addison's disease.
B. congestive heart failure.
C. cirrhosis with ascites.
D. inappropriate ADH secretion.
E. chronic diarrhea.

145. A 23-year-old woman with cystic fibrosis takes nutritional supplements, Vitamin C, and antibiotic prophylaxis to prevent respiratory infections. She has hyperoxaluria and recurrent calcium oxalate stones. The most likely cause of her stones is:

A. Vitamin C therapy.
B. reduction of intestinal Oxalobacter formigenes.
C. high calcium diet.
D. cystic fibrosis-associated ileal absorption disorder.
E. dietary glycine excess.

146. A 64-year-old man undergoes a six core biopsy for a PSA of 5.6 ng/ml. Pathology is a Gleason 6 (3+3) prostate cancer in a single core involving less than 10% of the tissue. The other cores are normal. He prefers active surveillance. The next step is:

A. MRI scan with endorectal coil.
B. initiate finasteride.
C. repeat prostate biopsy with 12 or more cores.
D. check PSA quarterly and repeat biopsy in one year.
E. counsel patient that he is not appropriate for active surveillance.

147. The periurethral prostatic glands in a young man:

A. comprise the bulk of the prostate.
B. comprise a small portion of the prostate.
C. empty into the ejaculatory duct.
D. are derived from the Wolffian duct.
E. are vestigial remnants.

148. A 41-year-old woman with endometriosis has intermittent left flank pain, gross hematuria, dysuria, and urgency that coincides with her menstrual cycle. A CT scan reveals mild left ureteral obstruction and no stones. Cystoscopy and cytology are normal. The next step is:

A. tamoxifen.
B. gonadotropin-releasing hormone agonist.
C. flutamide.
D. ureterolysis.
E. bilateral salpingo-oophorectomy.

149. Osteoporosis in men with prostate cancer undergoing androgen deprivation can be prevented by:

A. weight loss.
B. intermittent androgen deprivation therapy.
C. Vitamin D.
D. calcium.
E. pamidronate (Aredia).

150. Dilated Cowper's ducts seen on urethrography are:

A. lateral to the membranous urethra.
B. posterior to the prostatic urethra.
C. anterior to the bulbous urethra.
D. posterior to the bulbous urethra.
E. posterior to the membranous urethra.

Question #1 **ANSWER=E**

Typically described urodynamic findings in diabetics include: impaired bladder sensation, increased cystometric capacity, decreased bladder contractility, impaired uroflow, and later, increased residual urine. The main differential diagnosis in men is the presence or absence of bladder outlet obstruction. In this patient, urodynamic data document bladder outlet obstruction as well as probable diabetic cystopathy. Cystourethroscopy excluded urethral stricture; thus, prostatic obstruction is the likely etiology. CIC with or without medications, is an acceptable treatment but in the face of prostatic obstruction, TURP will alleviate the symptoms provided the patient does timed voiding to prevent overdistention. Neuromodulation is not indicated in a patient with bladder outlet obstruction. Given the degree of bladder outlet obstruction and the amount of residual urine, tamsulosin is unlikely to be as effective as TURP.

Wein AJ: Lower urinary tract dysfunction in neurologic injury and disease, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 59, p 2033

Question #2 **ANSWER=B**

A number of changes occur after placement of a ureteral stent including: hyperplasia and inflammation of the urothelium, smooth muscle hypertrophy, increased intrapelvic pressure, a decrease in ureteral contractility and vesicorenal reflux. Decreased ureteral contractility does contribute to vesicorenal reflex, which may have implications in infected systems in the setting of bladder outlet obstruction.

Chew B, Denstedt J: Access, stents and urinary drainage, in Nakada S, Pearle M (eds): ADVANCED ENDOUROLOGY. Totowa, NJ, Humana Press, 2006, chap 2, p 22.

Question #3 **ANSWER=B**

Liposarcoma of the paratesticular structures is most often associated with the spermatic cord. it is a rare tumor that is usually well-differentiated. As with all sarcomas of the paratesticular region, inguinal orchiectomy with high ligation of the spermatic cord with inguinal orchiectomy is generally advised to minimize the chance of local recurrence. Because of the low likelihood of hematogenous or lymphatic spread in a low grade sarcoma, additional radiation or chemotherapy would not likely be necessary. This tumor has a low likelihood of complete response to primary radiotherapy and therefore it is not a reasonable option. Hemiscrotectomy is unnecessary with no violation of the scrotum.

Richie JP, Steele GS: Neoplasms of the testis, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL-WALSH UROLOGY, ed 9. Philadelphia, Elsevier, 2007, chap 29, p 934.

Question #4 **ANSWER=B**

Renin is a proteolytic enzyme secreted in the juxtaglomerular apparatus of the kidney and is physiologically inert. Angiotensinogen is a plasma globulin substrate of hepatic origin, upon which renin acts to produce angiotensin I. Angiotensin I is a decapeptide which is also physiologically inert. Angiotensin I is acted upon by converting enzyme to produce the octapeptide angiotensin II. Angiotensin II is the first effector hormone of the renin system, and is the only substance directly responsible for elevation in blood pressure in patients with renovascular hypertension. It acts upon the smooth muscle of the peripheral vasculature to cause vasoconstriction, and also stimulates the zona glomerulosa to produce aldosterone which causes sodium retention in the distal tubule and thus produces volume expansion.

Novick AC, Fergany A: Renovascular hypertension and ischemic nephropathy, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 36, pp 1161-1163

Question #5 **ANSWER=C**

Osmolality is estimated by computing the sum of serum sodium (mEq/l) x 2, glucose (mg/dl)/18 and urea (mg/dl)/3. These three solutes are the major contributors to osmolality with creatinine, magnesium, phosphate and potassium contributing less. The chloride contribution is taken into account by doubling the sodium concentration.

Shoskes DA, McMahon AW: Renal physiology and pathophysiology, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 35, pp 1146-1148.

Robertson GL: Physiology of ADH secretion. KID INT SUPPL 1987;21:S20-S26.

Question #6 **ANSWER=E**

The imaging reveals a large congenital right sided bladder diverticulum. There is no evidence of bladder outlet obstruction or valves. This is a source of stasis (incomplete bladder emptying) that will not spontaneously resolve. Smaller periureteral diverticula are associated with dysfunctional elimination and are not treated surgically but in this case diverticulectomy is indicated. Based upon the size of the diverticulum, this child will almost certainly have recurrent infections. As such, prophylactic antibiotics or observation are not appropriate options in a pediatric patient. The diverticulum arises cephalad and lateral to the ureteral orifice. The ureter and diverticulum are intimately associated. The ipsilateral ureter should be reimplanted if it is near or included in the diverticulum whereas a diverticulum on the lateral bladder wall or dome (urachal diverticulum) can be resected without ureteral reimplantation. Both can be performed extravesically with entry into the bladder only when the diverticulum is entered.

Frimberger D, Kropp BP: Bladder anomalies in children, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 121, pp 3579-3580.

Question #7 **ANSWER=D**

Associated organ injury is common in patients with renal trauma. Nonrenal trauma accounts for the majority of the morbidity and mortality that occurs in such patients. As in the case described, CT allows staging of renal injury and detection of associated organ injury. Nonoperative management of both splenic and renal injury is possible in selected patients with renal injuries associated with limited extravasation and bleeding. Development of delayed bleeding, infection, or hypertension (related to the renal injury) is unlikely. Those cases where there are nonviable renal segments are more likely to require delayed laparotomy. Although splenic lacerations may be managed nonoperatively, up to 40% of those with Type II injuries (splenic laceration not extending to hilum) may require operative intervention. Although either injury described in the case presented may require delayed laparotomy, the splenic injury is more likely. The finding of the rigid abdomen suggests an intraperitoneal process. A missed bowel injury would present within the first several days after injury.

Harbrecht BG, Franklin GA, Miller FB, Richardson JD: Is splenectomy after trauma an endangered species? AM SUR 2008;74:410-412.

McAninch W, Santucci RA: Renal and ureteral trauma, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 39, p 1282.

Question #8 **ANSWER=A**

The differential diagnosis for low ejaculate volume azoospermia is vasal agenesis, ejaculatory duct obstruction, and ejaculatory dysfunction. The presence of unilateral vasal agenesis on physical examination strongly suggests the presence of a congenital anomaly with contralateral segmental vasal atresia. TRUS will help differentiate between a potentially treatable ejaculatory duct obstruction and, more likely, absence or hypoplasia of the contralateral seminal vesicle and ampullary vas deferens. Patients with vasal agenesis do not require either a serum FSH or testicular biopsy unless they have testicular atrophy or another historical risk factor. Seminal fructose does not help differentiate between these two disorders; it is absent in both.

Kolettis PN, Sandlow JI: Clinical and genetic features of patients with congenital unilateral absence of the vas deferens. UROL 2002;60:1073-1076.

Sigman M, Jarow JP: Male infertility, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 19, pp 619-622.

Question #9 **ANSWER=D**

Men with invasive penile cancer are at high risk of inguinal metastasis. Those men who present with palpable inguinal lymph nodes often have an inflammatory or infectious etiology due to poor hygiene. In these patients, two approaches can be employed. Patients can be treated with a two to four week course of antibiotic therapy to assess for resolution of lymphadenopathy. Alternatively, fine needle aspirate of suspicious nodes can be performed at presentation. If positive, this removes the need for delayed therapy due to antibiotics. Men with palpable nodes proven positive for metastatic disease should undergo superficial and deep inguinal node dissection as those with limited nodal disease are found to have up to an 80% five year disease-free survival with complete resection of nodal disease. Owing to the high rates of cure achieved with aggressive resection in limited nodal disease, many have advocated early dissection in men with invasive penile cancer and no palpable lymphadenopathy. In these men, dissection can be limited to nodes superficial to the fascia lata unless positive on evaluation. In men with palpable disease on one side, contralateral superficial dissection is mandatory owing to the high rate of lymphatic cross-over. In these cases, contralateral metastasis is noted in 50% of patients.

Pettaway CA, Lynch DF Jr, Davis JW: Tumors of the penis, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 31, pp 983-984.

Question #10 **ANSWER=E**

While both cold (storage) and warm (anastomotic) ischemic times have important roles in determining immediate function for deceased donor renal transplant recipients, these times are negligible in living donor transplantation and rarely affect immediate graft function. The single best determinant of immediate function in live donor transplantation is the functional status of the kidney at the moment it is removed from the donor.

Barry JM, Jordan ML, Conlin, MJ. Renal Transplantation, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 40, pp 1301-1303.

Question #11 **ANSWER=E**

Percutaneous renal access into the collecting system should be as peripheral as possible to help avoid serious hemorrhage. Direct puncture into an infundibulum or into the renal pelvis substantially increases the risk of hemorrhage. The temptation to utilize a previously placed nephrostomy tube in a suboptimal location should be abandoned. A new percutaneous access should be established. Staghorn calculi are best approached through polar access. Inferior or superior pole entry optimizes access to most of the collecting system. An interpolar puncture hinders entry into the superior or inferior calyceal groups. A posterior calyceal puncture decreases the need to torque instruments into the collecting system and helps reduce hemorrhage and eases stone extraction.

Sampaio FJB: Surgical anatomy of the kidney, in Smith AD, Badlani GH, Bagley DH, et al (eds): SMITH'S TEXTBOOK OF ENDOUROLOGY. Quality Medical Publishing, St. Louis, 1996, chap 12, pp 153-184.

Lingeman JE, Matlaga BR, Evan AP: Surgical management of upper urinary tract calculi, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 44, pp 1488-1490.

Question #12 **ANSWER=E**

Incidentally discovered adrenal masses have been reported in up to 4.4% of abdominal CT scans, most commonly in female patients between the ages of 50 and 70 years. A small minority of adrenal masses will be malignant, most often due to adrenocortical carcinoma or metastases to the adrenal gland. The primary indication for surgery is suspicion of malignancy based on size criteria, radiographic findings, or interval growth documented on follow-up imaging. The most useful parameter for assessing risk of malignancy is size; 5-6 cm is generally considered worrisome enough for surgical excision. Tumor histology and grade do not readily predict metastatic behavior. A high signal intensity ratio on T2 weighted MRI images suggests that the lesion is not a benign adenoma. Metabolic activity is common in both benign and malignant adrenal masses.

Vaughan ED Jr, Blumenfeld JD: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 53, pp 1838-1839.

Novakovic K, Ersahin C, Picken M, Campbell SC: Malignant adrenal tumors. AUA UPDATE SERIES 2004, vol 23, lesson 23, p 245.

Question #13 **ANSWER=C**

Sodium cellulose phosphate can restore normal calcium excretion in those with absorptive hypercalciuria. However, it can lead to a negative calcium balance. Thiazides are appropriate treatment for those with mild to moderate absorptive hypercalciuria and those at an increased risk of bone disease such as post-menopausal women and growing children. Thiazide therapy induces an increase in bone density. Thiazides may lose their hypocalciuric effect after two to four years, and patients may be switched to sodium cellulose phosphate for a short period of time. Orthophosphates are indicated for the management of absorptive hypercalciuria, Type III, where a renal leak of phosphate is thought to stimulate 1,25-(OH)2D synthesis. Orthophosphates inhibit this synthesis. Potassium citrate will alkalinize the urine but will not affect the serum or urinary calcium. Magnesium oxide may bind oxalate in the gut but will no effect on urinary calcium.

Preminger GM: Is there a need for medical evaluation and treatment of nephrolithiasis in the age of lithotripsy. SEM UROL 1994;12:51.

Pietrow PK, Preminger GM: Evaluation and medical management of urinary lithiasis, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 43, p 1418.

Question #14 ` **ANSWER=A**

Docetaxel is currently the only FDA-approved agent that has been shown to prolong survival in men with androgen-independent metastatic prostate cancer. In the pivotal trial of docetaxel, patients who received an every three week administration of the drug had a median survival of 18.9 months, as opposed to a 17.3 month median survival for patients who received docetaxel on a weekly basis and 16.4 months (difference of 2.5 months) for those who received mitoxantrone. The p-value comparing docetaxel every three weeks to mitoxantrone (which does not prolong survival but improves quality of life) was $p=0.009$. These findings led the FDA to approve docetaxel for use in these patients.

Tannock I, DeWit R, Berry W, et al: Docetaxel plus prednisone or mitoxantrone plus prednisone for advanced prostate cancer. NEJM 2004;351:1502-1512.

Eisenberger MA, Carducci M: Treatment of hormone-refractory prostate cancer, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 105, pp 3108-3110.

Question #15 **ANSWER=E**

Lymphatic spread of testicular cancer to the contralateral retroperitoneum is rare with left-sided tumors, but more common with right sided tumors. To this end, the contralateral margin differs for left- and right-sided modified RPLND templates. For left sided dissections, the right margin is the lateral edge of the IVC, primarily to ensure collection of the interaortacaval lymph nodes. On the right side, the dissection should be carried out further, optimally to the left ureter, as occasionally there will be involvement of the para-aortic lymph nodes in these patients. Although some authors have suggested that bilateral modified RPLND should be performed in all patients with right-sided tumors, the additional dissection down the left common iliac artery has not been shown to be of any additional benefit.

Richie JP, Steele GS: Neoplasms of the testis, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 29, pp 915-916.

Question #16 **ANSWER=D**

The urodynamic finding of detrusor external sphincter dyssynergia (DESD) indicates that a suprasacral spinal lesion is present. This cannot be explained by a recurrent hernia or permanent injury to L5. The most likely supraspinal lesion in a woman this age is multiple sclerosis.

Wein AJ: Lower urinary tract dysfunction in neurologic injury and disease, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 59, pp 2019-2020.

Question #17 **ANSWER=D**

Bacterial biofilms arise from bacterial adherence and growth of bacteria on solid surfaces and foreign bodies in the urinary tract. Bacteria form biofilms in a variety of environments, particularly on implants and stents in the urinary tract. A biofilm is defined as the accumulation of microorganisms and their extracellular products to form a structured community on a surface. Factors that influence bacterial adhesion to devices include the biomaterial surface characteristics, bacterial surface features, and the presenting clinical condition.

Frank DN, Wilson SS, St Amand AL, Pace NR: Culture-independent microbiological analysis of Foley urinary catheter biofilms.PLoS One. 2009 Nov 12;4(11):e7811.

Stickler DJ; Medscape. Bacterial biofilms in patients with indwelling urinary catheters. NAT CLIN PRACT UROL 2008;5:598-608. Epub 2008 Oct 14.

Choong S, Whitfield H: Biofilms and their role in infections in urology. BJU INT 2000;86:935-941.

Question #18 **ANSWER=E**

This patient most likely has either an arterial or a neurologic injury to explain his erectile difficulty. A neurologic lesion is less likely because of his failure to respond with an erection to a reasonable dose of prostaglandin E1. Patients with neurogenic injuries frequently respond to very low doses of intracavernosal agents. The major clinical question which needs to be answered is whether or not this patient has an arterial injury. Infusion cavernosography and infusion cavernosometry are studies which demonstrate the extent and site of corporovenous leakage. Fifteen ug of prostaglandin E1 is a reasonable dose of drug to administer and increasing the dose to 30 ug would likely not produce more information. The study of choice to determine the presence of arterial disease in this clinical situation is a color Doppler study of the penile arteries before and after the intracavernosal injection of vasoactive drugs. Only after arterial disease has been diagnosed and only when operative revascularization is under consideration should pelvic/pudendal arteriography be performed.

Lue TF, Broderick GA: Evaluation of nonsurgical management of erectile dysfunction and premature ejaculation, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 22, pp 757-759.

Question #19 **ANSWER=A**

This patient exhibits classic signs and symptoms of osteitis pubis. Pelvic and suprapubic pain, fever, and difficulty with thigh adduction are classic findings. Osteitis pubis has been reported to occur in up to 2.5% of women who have undergone the retropubic bladder neck suspension. Pubic osteomyelitis is possible but is far less common than osteitis pubis. Obturator nerve injury (usually secondary to retractors) can occur following cystourethropexy but does not present with symptoms three weeks postoperatively. Urinary extravasation would be very rare three weeks postoperatively. The signs and symptoms are much more in keeping with osteitis pubis than they are with pelvic abscess.

Chapple CR: Retropubic suspension surgery for incontinence in women, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 65, p 2176.

Question #20 **ANSWER=C**

Infection of the crural folds with Candida albicans and other Candida species is a very common condition. In women, Candida species are normal inhabitants of the gastrointestinal tract and are commonly present asymptomatically in the vagina. With a constant source of these organisms so nearby, it is not surprising that they frequently spread to the cutaneous aspects of the groin. The hallmark of cutaneous candidiasis is that of bright red inflammation. The initial changes occur at the apex of the crural fold; subsequently, the inflammatory plaque expands in a radial fashion to all surrounding skin. Generally small pustules overlying the red plaques can be identified, and sometimes, satellite lesions are found as solitary papulopustules separate from, but adjacent to the larger primary plaque. The degree to which pruritus is present varies greatly, but itching can be quite severe at times. A clinical diagnosis can be confirmed by culture. Alternatively, a KOH examination is useful if intact pustules are present. Fixed drug eruptions are typically circular hyperpigmented lesions. Contact dermatitis would not be expected to be bilateral. Molluscum contagiosum occurs primarily in children and has a different appearance, although a sexually transmitted form exists. Lichen planus has violacious flat topped papules and small white lesions on the genitalia.

RS Pannell, DM Fleming, KW Cross: The incidence of molluscum contagiosum, scabies and lichen planus. EPIDEMION INF 2005;133:985–991.

Link RE: Cutaneous diseases of the external genitalia, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 13, p 425.

Question #21 **ANSWER=E**

Traditional 10-core, 12-core, and even saturation biopsies utilize a transrectal approach, which limits access to the anterior prostate. Under regional or general anesthesia, the transperineal approach uses a template system to sample the prostate. This grid system is similar to the one used for brachytherapy. The advantage to the transperineal approach is its optimal access to the anterior and apical gland, particularly in high-risk patients with prior negative biopsies. The 10-core, 12-core, and saturation biopsy are most apt at sampling the peripheral zone.

Ramey JR, Halpern EJ, Gomella LG: Ultrasonography and biopsy of the prostate, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 92, pp 2889-2892.

Question #22 **ANSWER=E**

Patients with autosomal dominant polycystic kidney disease (ADPKD) may have intractable cyst pain. Standard practice has been to attempt percutaneous drainage of affected cysts, and if unsuccessful, to proceed with open surgical drainage. More recently laparoscopic renal cyst marsupialization has been performed for painful ADPCKD. The results document prolonged pain relief without significant long-term effects on renal function or blood pressure. There may be some improvement in blood pressure, but it is transient.

Novick AC: Open surgery of the kidney, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 50, p 1755.

Question #23 **ANSWER=C**

Osteomalacia occurs when mineralized bone is reduced and the osteoid component becomes excessive. Osteomalacia has been reported in patients with all forms of urinary diversion but is most common in colonic continent diversion and especially in postmenopausal women. The metabolic acidosis is buffered by the bone with release of bone calcium. Correction of acidosis and calcium supplementation will result in symptomatic relief and restoration of bone density. Major alterations in serum bicarbonate are not usually present and calcium is usually low normal. Patients who develop osteomalacia generally complain of lethargy; joint pain, especially in the weight-bearing joints; and proximal myopathy. The alkaline phosphatase level is elevated. Although bisphosphonates will decrease bone resorption they do not address the root cause of the problem. Vitamin B12 deficiency is not seen in colonic urinary diversion.

Dahl DM, McDougal WS: Use of intestinal segments in urinary diversion, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 80, p 2574.

Question #24 **ANSWER=A**

Hyperkalemia is usually not a problem for patients with chronic renal failure. Even end-stage kidneys are capable of some potassium excretion, and significant amounts of potassium may be lost via the intestinal tract. Potassium is restricted in a chronic renal failure diet and the associated protein restriction also curtails potassium intake. While all of the answers are possibilities, excessive intake of potassium is the most common cause of hyperkalemia.

Goldfarb DA, Nally JV Jr, Schreiber MJ Jr: Etiology, pathogenesis, and management of renal failure, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 41, pp 1341-1342.

Question #25 **ANSWER=D**

Gram negative sepsis in a child less than three months of age has a mortality approaching 15-20%. In an infant less than three months of age with a gram negative UTI, there is a 30% chance of a recurrent UTI over the next six months. In this infant with an obstructing primary megaureter and ipsilateral decreased renal function, surgical intervention is indicated. A tapered ureteral reimplantation would be technically very difficult at this age and should be deferred until older than one year of age. The preferred treatment is a low end cutaneous ureterostomy. Altering prophylaxis to sulfamethoxazole trimethoprim should not be done in an infant due to the risk of kernicterus and hematopoietic dysfunction.

Cordero L, Rau R, Taylor D, Ayers LW: Enteric gram-negative bacilli bloodstream infections: 17 years' experience in a neonatal intensive care unit. AM J INF CONTROL 2004;32:189-195.

Biyikli NK, Alpay H, Ozek E, et al: Neonatal urinary tract infections: Analysis of the patients and recurrences. PED INTERN 2004;46:21-25.

Question #26 **ANSWER=A**

Bacteriuria occurs in the majority of spinal cord injured patients managed by CIC. This patient's bacteriuria is not likely to originate from the small renal stone, nor would stone removal alleviate the bacteriuria. Localizing urine cultures are not necessary. The patient needs reassurance that chronic bacteriuria is not concerning, provided his urine storage pressures are low and he is symptom free. Urine acidification has not been proven to decrease the risk of bacteriuria in spinal cord injured patients. Sphincterotomy and condom catheter drainage in this patient with reasonable hand function is not an appropriate alternative, and will not reduce the incidence of bacteriuria.

Wan J, Fleenor S, Kielczewski P, McGuire EJ: Urinary tract status of patients with neurogenic dysfunction presenting with upper tract stone disease. J UROL 1992;148:1126-1128.

Schaeffer AJ, Schaeffer EM: Infections of the urinary tract, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 8, pp 295-299.

Question #27 **ANSWER=B**

With a stricture of the urethra or a bladder neck contracture using a catheter as small as 9 Fr may not allow urine to exit around it. Using a rectal pressure as an estimate of intra-abdominal pressure or use of a suprapubic catheter represent alternative methods. More simply, a smaller diameter catheter such as 7 Fr or less can be used.

Dector RM, Harpster L: Pitfalls in leak point pressure determination. J UROL 1992;149:588-591.

Maniam P, Goldman HB: Removal of transurethral catheter during urodynamics may unmask stress urinary incontinence. J UROL 2002;167:2080-2082.

Peterson AC, Webster GD: Urodynamic and videourodynamic evaluation of voiding dysfunction, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 58, pp 1988-1989, 2005-2006.

Question #28 **ANSWER=D**

Patients undergoing adrenalectomy for Cushing's syndrome have an excess of corticosteroids from an adrenal adenoma or carcinoma. These patients need stress-dose steroids and careful glycemic control as they often have obesity and diabetes. Alpha-blockers and hydration are indicated perioperatively for patients with pheochromocytoma. Beta-blockers may also be necessary preoperatively for patients with pheochromocytoma if they are tachycardic after alpha-blockade. Potassium sparing diuretics are important for the perioperative management of patients with hyperaldosteronism (Conn's disease) as they often have significant hypokalemia.

Chow GK, Blute ML: Surgery of adrenal glands, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 54, p 1871.

Question #29 **ANSWER=E**

Following acute ureteral obstruction, the renal pelvic pressure is initially elevated but gradually returns to normal. Glomerular filtrate exits the renal pelvis by extravasation into the perirenal spaces, pyelolymphatic backflow and pyelovenous backflow. It is believed that 80-90 percent of the filtrate in chronic hydronephrosis is reabsorbed in the tubules and exits via the renal veins.

Pais VM Jr, Strandhoy JW, Assimos DG: Pathophysiology of urinary tract obstruction, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 37, p 1200.

Question #30 **ANSWER=C**

HPV infection is associated with the development of penile cancer. Wives or ex-wives of men with penile cancer have a threefold higher risk of cervical carcinoma. The male partners of women with cervical intraepithelial neoplasia have a significantly higher incidence of penile intraepithelial neoplasia. Therefore screening with Pap smear and pelvic exam is prudent in this setting. HPV vaccination is inappropriate because it is only effective prior to exposure. More aggressive therapy such as biopsy or topical therapy is inappropriate unless a diagnosis of cervix cancer is suspected on physical exam and Pap smear.

Pettaway CA, Lynch DF Jr, Davis JW: Tumors of the penis, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 31, p 965.

Question #31 **ANSWER=D**

Bladder augmentation represents the best solution to this complex problem; however, this will commit the patient to CIC. In selected circumstances such as this, a continent catheterizable abdominal channel in conjunction with a bladder augmentation is appropriate. The urethral sphincter is intact in this patient as evidenced by a very high abdominal leak pressure. In a patient desiring a continent solution, an ileal conduit would not be indicated. Use of an Indiana pouch would require ureteral-enteric reanastomosis and a small but definitive risk for upper tract obstruction at the anastomosis. Detrusor myomectomy has not been shown to improve capacity long-term.

Rivas DA, Chancellor MB: Neurogenic vesical dysfunction. UROL CLIN N AM 1995;22:579-591.

Adams MC, Joseph DB: Urinary tract reconstruction in children, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 124, pp 3692-3693.

Question #32 **ANSWER=A**

This urodynamic study documents neurogenic detrusor overactivity and detrusor external sphincter dyssynergia in a patient with MS. Videourodynamics would be redundant and unnecessary. Male MS patients with detrusor sphincter dyssynergia appear to be at greatest risk for urological complications including upper tract deterioration. The upper tracts must be assessed early in a male patient with dyssynergia. Cystoscopy is unlikely to influence treatment planning, and would not be the most appropriate first step. MRI scan of the spine would be indicated in the scenario of unknown pre-existing neurogenic disease, but is unnecessary with a diagnosis of MS. A TRUS would be unnecessary as a TURP would not be recommended treatment in the scenario of neurogenic voiding dysfunction.

Wein AJ: Lower urinary tract dysfunction in neurologic injury and disease, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 59, p 2020.

Question #33 **ANSWER=D**

There was at one time concern that a cutaneous vesicostomy caused permanent loss of bladder volume and compliance. However, recent studies show that it does not significantly affect either. Preoperative videourodynamics showing a small bladder capacity do not predict eventual functional bladder capacity. Approximately 75% of children will have normal bladder function after vesicostomy closure. The need for bladder augmentation is more related to the effects of the primary pathological condition on the detrusor. Augmentation cystoplasty is rarely needed after undiversion in patients with a PUV. The eventual need for augmentation should be assessed with sequential follow-up after the vesicostomy has been closed.

Adams MC, Joseph DB: Urinary tract reconstruction in children, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 124, p 3701.

Casale AJ: Posterior urethral valves and other urethral anomalies, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 122, pp 3591-3592.

Question #34 **ANSWER=A**

Intrauterine insemination (IUI) is a highly effective treatment for men with normal semen parameters, especially normal sperm motility. IUI involves placing processed sperm via a catheter inserted through the cervix into the uterine cavity. This bypasses cervical mucous and higher numbers of motile sperm will be able to reach the fallopian tubes. Semen volume and sperm production is limited in men with Kallman's syndrome, because prostate, seminal vesicle and testicular size are affected. However, sperm quality tends to be completely normal. In vitro fertilization is not required at this point, and ICSI is unnecessary. Testis biopsy will not be helpful since the patient is not azoospermic. TRUS is useful to evaluate ejaculatory duct obstruction which is usually associated with azoospermia. It is not associated with Kallmann's syndrome.

Sigman M, Jarow JP: Male infertility, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 19, pp 635-636, 651.

Question #35 **ANSWER=C**

The ureteral wall consists of three different layers. However, the composition of these layers is not constant for the entire length of the ureter. The urothelium is four or five cell layers thick. Beneath the urothelium is a lamina propria with loose or dense connective tissue, but not a distinct structure. The muscularis varies in its composition over the course of the ureter. In the proximal ureter, it consists of a thin, poorly defined inner circular and an outer longitudinal layer. Both the mid and distal ureter have a muscularis which is distinctly composed of an inner longitudinal, middle circular, and outer longitudinal fibers. The deficiency in the muscularis of the upper ureter and the geometric arrangement of large areas of collagenous connective tissue interspacing the muscle bundles is thought to make the upper ureter more susceptible to serious ureteral injury.

Anderson JK, Kabalin JN, Cadeddu JA: Surgical anatomy of the retroperitoneum, adrenals, kidneys, and ureters, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 1, p 33.

Question #36 **ANSWER=A**

Renal mass biopsy should now be considered in select patients with small renal masses to help stratify oncologic risk and offer the optimal treatment intervention. Most studies suggest that biopsy has an accuracy of over 90% in distinguishing benign vs malignant histology and an associated 70-80% accuracy in assessing tumor histology and grade. Needle tract seeding is exceedingly rare. This patient has comorbidities that might encourage surveillance of his small renal mass, but a minimally invasive treatment would also be appropriate for an aggressive histology given the favorable tumor size and location. Knowing the histology could assist in counseling this patient, particularly since ~20% of small renal masses are benign. Radical nephrectomy would be inappropriate in treating a small exophytic lesion in a patient with renal insufficiency. Given the patient comorbidity and the potential morbidity of partial nephrectomy, a less invasive approach is favored in this setting. This patient is also a reasonable candidate for observation.

Lane BR, Campbell SC: Management of small renal masses. AUA UPDATE SERIES 2009, vol 28, lesson 34, pp 314-317.

Novick AC, Campbell, SC, Belldegrun A, et al: Guideline for management of the clinical stage1 renal mass. MANAGEMENT OF THE CLINICAL STAGE 1 RENAL MASS GUIDELINE. Urological Association Education and Research, Inc, 2009.

Question #37 **ANSWER=D**

Detrusor overactivity with impaired contractility is the most common cause of urinary incontinence in the frail elderly and presents as urge incontinence or unspecified incontinence with large postvoid residual urine. Detrusor-sphincter dyssynergia is only seen in patients with neurologic disorders. Patients with intrinsic sphincter deficiency complain of stress incontinence. She has no risk factors for decreased bladder compliance.

Resnick NM, Yalla SV: Geriatric incontinence and voiding dysfunction, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 71, pp 2310-2311.

Question #38 **ANSWER=D**

Ceftriaxone is the drug of choice for Neisseria urethritis and cervicitis. It is safe to administer during pregnancy. Tetracycline and spectinomycin should be avoided. Although erythromycin may be given, it is not the preferred antibiotic in this situation. The decision to administer penicillin to a patient with a history of allergy is dependent on the severity of the reaction and the availability of alternative drugs. Only one-fourth of those with a history of allergic reactions to penicillin have an adverse effect when re-challenged with the drug. Desensitization techniques may be of value to those with a history of major allergic reaction and where there is a strong need to give the drug. Ceftriaxone can be administered to women in their 3rd trimester.

MMWR, Sexually Transmitted Diseases Treatment Guidelines, 2006. August 4, 2006 / 55 (RR11); Gonococcal infections.

Question #39 **ANSWER=B**

Urologists may have significant occupational radiation exposure. It is important to wear radiation protection for the body, thyroid and eyes. Place the fluoroscopy beam under the table if possible and use the principle ALARA or "as low as reasonably achievable". The maximum yearly dose recommended by the National Council on Radiation Protection is 5000 mrem or 5 rem.

Gupta M, Ost MC, Shah JB, McDougall EM, Smith AD: Percutaneous management of the upper urinary tract, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 46, p 1534.

Question #40 **ANSWER=B**

Renal ischemia will deplete ATP energy stores, decreasing activity of active transport via Na+/K+ and Ca++/Mg++ ATPases. As a result, intracellular influx of Na+, Ca++, Cl- and water occur. The influx of water causes cellular swelling and tissue damage. The use of solutions containing impermeable solutes, such as mannitol, help reduce cellular edema. Additionally, mannitol infusion results in improved renal hemodynamics and an osmotic diuresis.

Beri A, Lattouf JB, Deambros O, et al: Partial nephrectomy using renal artery perfusion for cold ischemia: functional and oncologic outcomes. J ENDOUROL 2008;22(6):1285-1290.

Question #41 **ANSWER=D**

Delayed return of sperm in the ejaculate may occur after vasoepididymostomy. Men without sperm in the epididymal fluid at the time of the anastomosis will never recover sperm in the ejaculate. Forty-one percent of patients will have delayed appearance of sperm in the ejaculate which can take up to one year or longer. The ultimate mean sperm count will be similar in those with immediate and delayed return of sperm. Delayed anastomotic obstruction is also the same in both groups.

Yang G, Walsh TJ, Shefi S, Turek PJ: The kinetics of the return of motile sperm to the ejaculate after vasectomy reversal. J UROL 2007;177:2272-2276.

Jarow JP, Sigman M, Buch JP, Oates RD: Delayed appearance of sperm after end-to-side vasoepididymostomy. J UROL 1995;153:1156.

Question #42 **ANSWER=E**

The inferior mesenteric artery supplies the main blood supply to the left colon via the left colic artery and superior hemorrhoidal arteries. When this is injured or ligated, blood supply is maintained proximally via the middle colic artery which is a branch of the superior mesenteric artery and distally via the middle and inferior hemorrhoidal arteries. The middle colic and hemorrhoidal arteries connect with each other via the marginal artery of Drummond. This artery runs parallel to the wall of the colon. It is important to maintain this artery during any dissection of the left colon in cases where injury to the inferior mesenteric artery may occur.

Anderson JK, Kabalin JN, Cadeddu JA: Surgical anatomy of the retroperitoneum, adrenals, kidneys, and ureters, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 1, p 13.

Question #43 **ANSWER=A**

Overall infection rates following initial penile prosthesis insertion range from 1 to 3%. This rate is considerably higher for revision surgery (7-18%). Antibiotic impregnation of prostheses components has reduced the risk of infection. Risk of mechanical failure, erosion, penile pain, and hemorrhage are not higher after repeat prosthesis insertion. Loss of penile size has been associated with delayed reimplantation, and so early replacement has been advocated for patients considering replacement.

Montague DK: Prosthetic surgery for erectile dysfunction, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 23, pp 795-796.

Question #44 **ANSWER=B**

Small cell carcinoma of the bladder is a relatively rare tumor of the bladder that may arise in combination with urothelial carcinoma. It is usually biologically aggressive with early vascular and muscular invasion. These malignancies usually respond to, but are not cured by, cisplatin-based chemotherapy regimens. Neither partial cystectomy nor intravesical chemotherapy is appropriate in this setting. Radiation or extirpative surgery alone may result in cure rates of 5 to 20%. However, neoadjuvant chemotherapy followed by surgery or radiation therapy results in cure rates of 40 to 65%. Therefore, the best treatment is cisplatin-based chemotherapy followed by an aggressive local treatment such as surgery or radiation if the patient does not progress.

Messing EM: Urothelial tumors of the bladder, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 75, p 2444.

Question #45 **ANSWER=B**

Bacteria that make beta-lactamase (penicillinase) are resistant to penicillin because the beta-lactamase hydrolyzes the penicillin. The beta-lactamase inhibitors bind to beta-lactamase to make it unavailable for causing enzymatic hydrolysis of penicillinase-susceptible penicillin. In this way, clavulanic acid and sulbactam, inhibitors of microbial beta-lactamases, will allow hydrolysable penicillins to continue to be active against resistant organisms. These inhibitors do not enhance drug entry into bacteria, nor are they active against the bacteria on their own. They are used in combination with a penicillin-like antimicrobial agent such as: ticarcillin-clavulanic acid (Timentin), ampicillin-sulbactam (Unasyn), amoxicillin-clavulanic acid (Augmentin). Methicillin itself is a penicillinase-resistant penicillin, and as such the addition of a beta-lactamase inhibitor is not useful in treating bacteria already resistant to methicillin.

Jacoby GA, Munoz-Price LS: The new beta-lactamases. NEJM 2005;352:380-391.

Question #46 **ANSWER=E**

The decrease in vibratory sensation of the hands and feet, a delayed first sensation at 400 ml on a CMG, and increased residual urine all favor the diagnosis of diabetic cystopathy. Urinary frequency and nocturia may also be due to an osmotic diuresis. The absent bulbocavernosus reflex is unusual but can occur in normal men. Good sphincter tone and voluntary sphincter contraction would suggest there is no abnormality in the sacral reflex. The findings presented are more consistent with undiagnosed diabetes mellitus. These urodynamic findings are not typical for Parkinson's disease which is usually detrusor overactivity and impaired contractility. In contrast, Shy-Drager syndrome would have detrusor overactivity, open bladder neck, and denervation of the external sphincter. Herpes zoster tends to have cutaneous lesions and exhibit a dermatomal pattern, not a symmetrical neuropathy as described in this scenario.

Wein AJ: Lower urinary tract dysfunction in neurologic injury and disease, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 59, pp 2033-2034.

Appell R, Whiteside H: Diabetes and other peripheral neuropathies affecting lower urinary tract function, in Krane RJ, Siroky MB (eds): CLINICAL NEURO-UROLOGY. Boston, Little Brown and Co, 1991, pp 365-373.

Question #47 **ANSWER=B**

Hysterectomy is responsible for the majority (54%) of surgical ureteral injuries. Next most common was colorectal surgery (14%), followed by pelvic surgery such as ovarian tumor removal and transabdominal urethropexy (8%), followed lastly by abdominal vascular surgery (6%). Ureteroureterostomy, or so-called end-to-end repair, is used in injuries to the upper two thirds of the ureter. It is required commonly, up to 32% of the time in large series. Simple transection of the ureter at the L5 level can be easily managed by spatulating each end of the ureter and performing an elliptical anastomosis over a stent. Transureteroureterostomy could potentially compromise the contralateral ureter. In the absence of life threatening bleeding or other traumatic injuries, injuries recognized intraoperatively should be repaired immediately; delayed repair is thus inappropriate. Psoas hitch should be reserved for defects of the distal ureter; Boari flaps are only necessary when larger defects of the distal and mid ureter preclude simpler reconstructive approaches.

McAninch W, Santucci RA: Renal and ureteral trauma, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 39, p 1278.

Question #48 **ANSWER=E**

This patient has a post-op ileus in which there will be increased fluid losses of isotonic fluid into the bowel lumen. The presence of bilious output is indicative of the ileus and the associated loss of fluids and secretions (including pancreatic) into the bowel lumen. When a post-op ileus occurs, these insensible losses need to be replaced early on in the process to prevent dehydration and secondary vascular compromise. This is best accomplished with a fluid that is isotonic like Lactated Ringer's that also provides replacement with appropriate levels of potassium, chloride, and bicarbonate. Saline with KCl supplementation would be more appropriate for replacement of gastric secretions.

Evers BM: Small bowel, in Townsend CM Jr, Beauchamp RD, Evers BM, Mattox, KL (eds): TOWNSEND: SABISTON TEXTBOOK OF SURGERY, ed 18. Philadelphia, Saunders Elsevier, 2007, pp 132-134.

Question #49 **ANSWER=D**

Rectal injury occurs in approximately 1.5% of patients undergoing radical prostatectomy. If the injury is recognized intraoperatively and the patient has received an appropriate combination bowel prep, the injury can be repaired primarily. If the rectal injury is recognized post-operatively as a vesicorectal fistula, conservative management is not indicated. In this case, the patient also has associated infection and therefore a colostomy with delayed primary repair is indicated. In the face of a large fluid collection and active infection, less aggressive approaches are not indicated.

Harpster LE, Rommel FM, Sieber PR, et al: The incidence and management of rectal injury associated with radical prostatectomy in a community based urology practice. J UROL 1995;154:1435-1438.

Rovner ES: Urinary tract fistula, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 72, p 2355.

Question #50 **ANSWER=B**

The presence of clue cells (vaginal epithelial cells whose borders are obscured by bacteria) and a positive whiff test (fish odor after adding potassium hydroxide to the discharge) are diagnostic of a Gardnerella vaginalis infection. The organism is not a tissue pathogen, so local symptoms are absent. Treatment with oral metronidazole is the standard. New molecular techniques have identified a biofilm containing mostly Gardnerella and Atopobium vaginae, which can persist after treatment; thus suppressive treatment with metronidazole gel can prevent recurrence. Candida vaginitis and Trichomonas vaginalis are diagnosed by finding the organisms that cause these infections on microscopic examination. Chlamydia causes a cervicitis, and mucorrhea (a clear or cloudy discharge) is normal.

Hay P: Recurrent bacterial vaginosis. CURR DIS OPIN INFECT DIS 2009;22:82-86.

Question #51 **ANSWER=B**

Laparoscopic varicocelectomy is a minimally invasive option for management of varicoceles. The genitofemoral nerve lies directly atop the psoas muscle. Approximately 4-5 % of patients undergoing laparoscopic varicocelectomy will complain of either temporary or permanent alterations in the sensory innervation of the anterior thigh consistent with injury to the genitofemoral nerve. The genitofemoral nerve arises from L1-L2, emerges from the psoas, passes posterior to the ureter and divides into the genital and femoral branches above the inguinal ligament. The femoral branch then passes behind the inguinal ligament and enters the femoral sheath. The genital branch enters the inguinal canal close to the internal inguinal ring to supply the cremaster muscle and the scrotal skin. The ilioinguinal nerve (numbness on the base of the penis and anterior scrotum) and lateral femoral cutaneous nerve (numbness on the lateral thigh) run at least 3 cm lateral to the internal ring and, therefore, should be at little risk during routine laparoscopic varicocelectomy. The obturator nerve (inability to adduct the thigh) is medial and caudal to the iliac vessels and should not be injured during varicocelectomy. The femoral nerve (inability to extend the knee) is deep in the psoas muscle. It can be injured during open surgery with retraction but injury is unlikely during laparoscopy.

Anderson JK, Kabalin JN, Cadeddu JA: Surgical anatomy of the retroperitoneum, adrenals, kidneys, and ureters, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 1, p 17

Question #52 **ANSWER=C**

In a woman with no evidence of abscess formation or a fluid collection, there is little need to wait an extended period of time before fistula repair. The abdominal approach provides better access to a radiation induced fistula and allows an omental pedicle flap to be interposed between the bladder and vaginal wall. Obliteration of dead space, good bladder drainage, control of infection and interposition of healthy tissue are critical elements to fistula closure.

Rovner ES: Urinary tract fistula, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 72, pp 2330-2331.

Question #53 **ANSWER=B**

Patients with bilateral adrenal hyperplasia are best treated medically. Bilateral adrenalectomy will sacrifice glucocorticoid and mineralocorticoid function. Moreover, either partial or unilateral adrenalectomy will not correct the hypertension accompanying this disorder. While patients become hypokalemic with hyperaldosteronism, neither potassium supplementation nor salt restriction will correct the etiology of the hypertension. Captopril may be indicated in a subset of primary hyperaldosteronism patients in whom aldosterone production is not completely autonomous from angiotensin II stimulation.

Vaughan ED Jr, Blumenfeld JD: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 53, p 1856.

Question #54 **ANSWER=A**

Children with correction of severe obstructive uropathy will sometimes demonstrate a persistent decrease in renal concentrating ability. This tends to worsen with growth and may lead to very high obligate urine output. This output can, at times, be so high that children cannot void frequently enough to maintain safe intravesical pressures; hydronephrosis and rising creatinine will ensue. This boy appears to void without obstruction. He does have reduced bladder compliance (as many valve patients do), but his pressures only reach 32 cm H_2O by 280 ml - which should be an average six-year-old bladder capacity. However, if his urine output is very high, then he will reach this capacity very quickly after voiding. While he may eventually need timed voiding, antimuscarinic medication, CIC, or use of a nocturnal indwelling catheter, none of them can be used in a logical way without first knowing more about the patient's daily urine output volume. An alpha-blocker is not indicated in this patient.

Casale AJ: Posterior urethral valves and other urethral anomalies, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 122, pp 3586-3587.

Question #55 **ANSWER=C**

The absence of a perinephric fluid collection and late presentation of hydronephrosis accompanied by slowly declining renal function suggests the possibility of significant reflux into the transplant ureter. The most appropriate initial diagnostic study is a voiding cystourethrogram. Although a CT scan of the abdomen and pelvis can demonstrate the anatomy to a better degree than the ultrasound, the findings here with additional definition does not help with diagnosing the rise in creatinine. If a VCUG shows no reflux, a diuretic MAG-3 renal scan would be done to quantify any degree of obstruction at the ureterovesical junction where the anastomosis was performed. A retrograde ureterogram would be helpful but that is a diagnostic procedure that requires anesthesia and also the location of the ureteroneocystostomy is difficult to cannulate especially in the suspicion of ureteric complications such as stenosis. Renal allograft biopsy is not indicated as the first step in an ultrasound finding of significant hydronephrosis. The likelihood of long-term ureteric stenosis is 5-8%, whereas the likelihood of reflux exceeds 50% in the post-transplant population.

Naraghi RM, Jordan ML: Surgical complications of renal transplantation, in Shapiro R, Simmons RL, Starzl TE (eds): RENAL TRANSPLANTATION. Stamford, Appleton and Lange, 1997, pp 269-297.

Barry JM, Jordan ML, Conlin, MJ: Renal transplantation, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 40, p 1321.

Valentini AL, De Gaetano AM, Minordi LM, et al: Contrast-enhanced voiding US for grading of reflux in adult patients prior to antireflux ureteral implantation. RAD 2004:233:35-39.

Question #56 **ANSWER=A**

Distal RTA (Type I) is commonly associated with urinary calculi, primarily calcium phosphate stones. The hallmark of RTA is an inability to acidify the urine. Initial screening for RTA can be done by measuring the pH of the second voided morning urine specimen after the patient has fasted overnight. The second voided specimen is better than the first because the first voided specimen may have an elevated pH as a result of pre-fasting food intake.

Pietrow PK, Preminger GM: Evaluation and medical management of urinary lithiasis, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 43, p 1403.

Question #57 **ANSWER=A**

There is current controversy as to whether patients with Wilms' tumor should undergo primary surgical exploration or initial pre-operative chemotherapy. However, there is general consensus that there are several instances when surgical therapy should not be undertaken, other than biopsy. This includes vena caval extension of the tumor above the hepatic veins, inoperable tumor, and bilateral disease. Bilateral disease is seen in about 5% of cases. In these cases, therapy is directed towards preservation of renal tissue since there is high incidence of renal failure, especially when a primary nephrectomy is undertaken. Thus, primary chemotherapy is indicated in patients with bilateral disease with a subsequent surgical exploration following completion of the first course of chemotherapy.

Ritchey ML, Ferrer FA: Wilms' tumor: Docimo SG, Canning DA, Khoury AE (eds). CLINICAL PEDIATRIC UROLOGY, ed 5. London, Informa Healthcare, 2007, p 507.

Question #58 **ANSWER=D**

Detrusor LPP is the most reliable urodynamic parameter to predict the risk of upper tract deterioration after sphincterotomy. A detrusor LPP of higher than 40 cm H_2O indicates that the sphincterotomy has failed, and may serve as a guide to determine whether a repeat sphincterotomy is necessary. Abnormal compliance, which may be detected on CMG, may also be a worrisome finding, but there is much less established predictive value. To date, there is no correlation of urethral function tests (urethral pressure profile, Valsalva LPP, EMG) to upper tract deterioration.

Moy ML, Wein AJ: Additional therapies for storage and emptying failure, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 70, pp 2302-2303

Question #59 **ANSWER=D**

Clomiphene citrate is an antiestrogen that blocks the negative feedback of estrogen on the hypothalamus and pituitary. It will raise the serum FSH, LH, and testosterone. Estradiol may also rise because of peripheral conversion of testosterone through the action of aromatase. When used for idiopathic oligospermia, the majority of (but not all) controlled studies show no effect on pregnancy rates. Clomiphene citrate does not affect prolactin levels.

Sigman M, Jarow JP: Male infertility, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 19, p 646.

Question #60 **ANSWER=A**

The clinical history strongly suggests that this girl has an ectopic ureter even though the ultrasound does not show evidence of this. The absence of an abnormality on ultrasound does not rule out an ectopic ureter. Occasionally, the renal parenchyma from the upper pole of the kidney that is associated with the ectopic ureter is difficult to locate and may be identified only by alternative imaging studies. In cases in which an ectopic ureter is strongly suspected because of incontinence yet no definite evidence of the upper pole renal segment is found, magnetic resonance imaging (MRI or CT scanning) will likely demonstrate the small, poorly functioning upper pole segment and ureter. None of the other options will adequately visualize the ectopic ureter.

Schlussel RN, Retik AB: Ectopic ureter, ureterocele, and other anomalies of the ureter, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 116, pp 3383, 3393.

Question #61 **ANSWER=C**

The International Continence Society has established a standardized system to quantify pelvic organ prolapse, this classification is known as the POPQ system an acronym that is short for pelvic organ prolapsed quantification. The system uses the hymenal ring as its central identification point, the hymen was chosen over the vaginal introitus because it can be more precisely located within the vaginal vault, all measurements are based from this location. This classification avoids the use of the terms cystocele or rectocele, recognizing that the actual organ prolapsing may be unable to be determined by a physical examination. The examination to determine POPQ stage is performed in a dorsal lithotomy position with the patient straining. The POPQ staging system has excellent inter-observer and intra-observer reliability and has become the standard for reporting outcomes following prolapsed repair. The staging system is however not perfect and can be significantly affected by patient positioning, with the degree of the prolapsed being more severe if the patient is examined with the head of the table raised to 45 degrees or higher. In addition, it fails to assess for unilateral or asymmetric defects. The POPQ staging systems is defined as: Stage 0 - no prolapsed; Stage I - the most distal portion of the prolapse is more than 1 cm above the hymen; Stage II - the most distal portion of the prolapse is +/-1 cm above or below the hymen; Stage III - the most distal portion of the prolapsed protrudes > 1 cm below the hymen and the total vagina has not prolapsed; Stage IV - the entire vagina everts-complete prolapse.

Herschorn S: Vaginal reconstructive surgery for sphincteric incontinence and prolapse, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 66, pp 2207-2209.

Question #62 **ANSWER=C**

The incidence of epididymitis during amiodarone therapy is reported to be as high as 11%. Epididymitis usually resolves with discontinuation of this medication, which should be done under the supervision of the treating cardiologist. Dose reductions of amiodarone may also improve symptoms. This condition has been associated with high serum or epididymal levels of amiodarone or its metabolites. The development of anti-amiodarone antibodies may play a role in the pathophysiology of this disorder. Lymphocytic infiltration and fibrosis of the epididymis are seen on histologic analysis. There is no bacterial etiology and thus antibiotics are not indicated.

Tracy CR, Steers WD, Costabile R: Diagnosis and management of epididymitis. UROL CLIN N AM 2008;35:101-108.

http://www.urologyhealth.org/search/index.cfm?topic=490 accession date 6/25/2010.

Nikolaou M, Ikonomidis I, Lekakis I, et al: Amiodarone-induced epididymitis: A case report and review of the literature. INT J CARDIO 2007;121:15-16. Epub 2007 Aug 10.

Gabal-Shehab LL, Monga M: Recurrent bilateral amiodarone induced epididymitis. J UROL 1999;161:921.

Question #63 **ANSWER=C**

Endogenous creatinine and creatinine clearance is the most widely used surrogate for GFR. In the presence of normal renal function, 90% of creatinine is filtered and 10% is secreted by the proximal tubules. As GFR declines, tubular secretion may contribute up to 35% of all creatinine removal at levels of 40-80 ml/min. The commonly utilized antibiotic trimethoprim blocks the tubular secretion of creatinine. Since creatinine is produced at a steady state, the serum creatinine will rise but the GFR does not change. Captopril and spironolactone might alter renal perfusion causing a change in the GFR that leads to an altered creatinine level. Cisplatin has a direct nephrotoxic effect but would not raise creatinine without altering GFR.

Shoskes DA, McMahon AW: Renal physiology and pathophysiology, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 35, pp 1132-1133.

Question #64 **ANSWER=A**

Autonomic dysreflexia is a potentially life-threatening condition seen in patients with spinal cord injury above the T6 spinal level. It is precipitated by a variety of stimuli although for the practicing urologist it is most commonly seen during procedures that result in bladder or bowel distension. Afferent stimuli arising below the T6 spinal level leads to massive reflexive sympathetic discharge from thoracolumbar levels with inability of hypothalamic inhibition due to the spinal cord disruption. This leads to hypertension associated with headache, facial flushing and diaphoresis. Reflex bradycardia occurs secondary to carotid body stimulation by the hypertension. Tachycardia and hypotension are not associated with autonomic dysreflexia. The initial treatment should be to remove the noxious stimuli. Thus prompt bladder drainage and cessation of the procedure should occur.

Wein AJ: Lower urinary tract dysfunction in neurologic injury and disease, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 59, p 2026.

Question #65 **ANSWER=C**

The presence of small volume testes with an elevated FSH suggests the presence of non-obstructive azoospermia. Most men with non-obstructive azoospermia will have sperm retrievable from the testes that can be used in conjunction with in vitro fertilization for the wife.

The most important characteristic to determine eligibility for treatment will be the wife's age and fertility. Screening for obstruction (with vasography) is not of value.

Carpi A, Sabanegh E, Mechanick J: Controversies in the management of nonobstructive azoospermia. FERT STERIL 2009;91:963-970. Epub 2009 Mar 21.

Devroey P, Liu J, Nagy Z, et al: Pregnancies after testicular sperm extraction and intracytoplasmic sperm injection in non-obstructive azoospermia. HUM REPROD 1995;10:1457-1460.

Question #66 **ANSWER=B**

The treatment of hyperchloremic metabolic acidosis involves administering alkalinizing agents or blockers of chloride transport. Alkalinization with oral sodium bicarbonate is effective in restoring normal acid-base balance if it is tolerated. Sodium citrate and citric acid solution (Bicitra or Shohl's solution) used together is an effective alternative; however, many patients do not care for the taste. Potassium citrate, sodium citrate, and citric acid solution (Polycitra) may be used instead if excessive sodium administration is a problem because of cardiac or renal disease and if potassium supplementation is desirable or at least not harmful. In those patients in whom persistent hyperchloremic metabolic acidosis occurs and in whom excessive sodium loads are undesirable, chlorpromazine or nicotinic acid may be used to limit the degree of the acidosis. These agents used alone do not correct the acidosis, but they limit its development and thus reduce the need for alkalinizing agents. Chlorpromazine and nicotinic acid inhibit cAMP and thereby impede chloride transport, helping to minimize bicarbonate loss.

Dahl DM, McDougal WS: Use of intestinal segments in urinary diversion, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 80, pp 2570-2573.

Question #67 **ANSWER=E**

Renal artery aneurysms are often associated with hypertension. Other symptoms may include flank pain and hematuria. When less than 1.5 cm in size, conservative management such as sodium restriction, weight loss, and antihypertensives (thiazide diuretics) are indicated. Although rupture of renal artery aneurysms is uncommon, when it occurs during pregnancy, the results can be catastrophic. For this reason, it is recommended that renal artery aneurysms in women of child bearing age be surgically repaired. Fully calcified renal artery aneurysms tend to be stable and have negliable risk for rupture and would not require surgical intervention. Selective embolization will lead to loss of significant renal parenchyma.

Novick AC, Fergany A: Renovascular hypertension and ischemic nephropathy, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 36, p 1187.

Question #68 **ANSWER=D**

Factors that determine kidney stone formation include supersaturation, inhibitors and promoters of crystallization, and intrarenal anatomy. Promoters are matrix and Tamm-Horsfall protein whereas inhibitors are citrate, magnesium, pyrophosphate, bikunin, glycosaminoglycans, and osteopontin.

Pearle MS, Lotan Y: Urinary lithiasis: Etiology, epidemiology, and pathogenesis, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 42, pp 1369-1371.

Question #69 **ANSWER=A**

Approximately 10% of traumatic pediatric genitourinary injuries are due to penetrating trauma with gun shot wounds to the trunk causing a genitourinary injury approximately 15% of the time. In patients with GU trauma secondary to a gunshot wound, the kidney is the site of injury in approximately 60% of the patients, the bladder in 20%, the urethra in 5%, the ureter in 2%. Two or more genitourinary injuries occur in 13%. If a genitourinary structure is traumatically damaged due to a gunshot wound the likelihood of associated organ injury is approximately 90%. In most cases, gunshot wounds to the abdomen will result in a hemodynamically unstable patient with multiple associated organ injuries, requiring urgent laparotomy. The need for emergent surgery excludes the ability to adequately stage the renal injury.

However, several studies have shown that a selective nonoperative approach to the management of patients with stab wounds and in very select cases, low velocity gunshot wounds, can be safely implemented. Specifically, in hemodynamically stable patients with a penetrating wound posterior to the anterior axillary line, intravenous antibiotics are initiated to cover the contamination induced by a penetrating foreign object and a screening triphasic abdominal and pelvic CT scan is obtained. If the patient has an isolated grade 1 or 2 renal injury the vast majority of patients can be managed successfully with a non-operative approach with only minimal complications. In these patients surgical exploration is indicated for persistent blood loss, the presence of air in the peritoneum, signs of developing peritonitis, or radiographic findings consistent with a ureteral injury.

Velmahos G, Demetriades D: Is nonoperative management of abdominal gunshot wounds reasonable? ADV IN SUR 2002;36:123-140.

Heyns C: Renal trauma: Indications for imaging and surgical exploration. BJU INT 2004;93:1165-1170.

Santucci R, Wessells H, Bartsch G, et al: Evaluation and management of renal injuries: Consensus statement of the renal trauma subcommittee. BJU INT 2004;93:937-954.

Question #70 **ANSWER=C**

Neurofibromatosis type I or Von Recklinghausen Disease is diagnosed when a patient has two of any of the seven classic features: ≥ 6 cafe-au-lait cutaneous pigmentation (approximately 100% of patients), excessive axillary or inguinal freckling, hamartomas of the iris, optic gliomas, neurofibromas, osseous bone lesions (sphenoid dysplasia that causes exophthalmous or cortical thinning of the long bones) or a family history of neurofibromatosis. Neurofibromatosis type II is characterized when bilateral acoustic neuromas are found in conjunction with any two of the following findings, neurofibroma, CNS meningioma, schwannoma, glioma or optic lenticular opacities. Type II patients are more likely to have CNS tumors and < 50% have café-au-lait spots. Both types are transmitted in an autosomal dominant fashion; however type II usually will arise as a spontaneous mutation.

The most common cause of hypertension within patients with neurofibromatosis of either type is renal artery stenosis due to proliferation of neural tissue within the arterial wall resulting in intimal thickening and subsequently renal artery stenosis. On rare occasions, hypertension within this population may arise from a secondary pheochromocytoma, a tumor known to be associated with this disorder. Primary hyperaldosteronism results in hypertension due to the overproduction of the mineralocorticoid aldosterone and classically arises from one of two disorders, either bilateral idiopathic hyperaldosteronism or an aldosterone producing adenomas arising in the adrenal gland. A juxtaglomerular tumor also known as a reninoma is a rare solitary small (< 3 cm in size) hypovascular tumor. This tumor is usually benign and will found in the renal cortex usually in the hilar region. It will arise from endothelial cells of the juxtaglomerular apparatus and causes hypertension by excessive renin secretion. Diabetes insipidus occurs either as a central defect with inadequate secretion of pituitary vasopressin or when the kidney is resistant to vasopressin activity (nephrogenic diabetes insipidus). This defect will result in diuresis, hypernatremia and hypotension due to volume loss. Neither primary hyperaldosteronism, adrenal cortical carcinoma, juxtaglomerular cell tumors, nor diabetes insipidus are associated with neurofibromatosis.

Novick AC, Fergany A: Renovascular hypertension and ischemic nephropathy, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 36, pp 1190-1191.

Question #71 **ANSWER=B**

Inhibin is a heterodimeric protein hormone in the transforming growth factor family of protein hormones including activin. Inhibin is secreted by the Sertoli cell for normal feedback inhibition of FSH. Testosterone is regulated by LH. Secretion of both FSH and LH is stimulated by gonadotropin-releasing hormone from the hypothalamus. Müllerian inhibiting factor is secreted by Sertoli cells during embryogenesis and inhibits the development of the Müllerian structures.

Schlegel PN, Hardy MP, Goldstein M: Male reproductive physiology, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 18, pp 577-578.

Question #72 **ANSWER=C**

Approximately 30% of the patients treated with standard oxybutynin therapy and 15% using slow release formula will develop symptomatic complaints of dry mouth, constipation, and heat intolerance. To reduce the side-effects, intravesical oxybutynin may be used, however, approximately 15-20% of the patients will discontinue the intravesical oxybutynin therapy because of persistent side-effects or clinical ineffectiveness.

New strategies for treating neurogenic detrusor overactivity in antimuscarinic refractory or intolerant patients include intravesical administration of resiniferatoxin or botulinum-A toxin injections into the detrusor muscle. In patients with spinal cord injuries, reorganization of the micturition reflex after the interruption of spinal cord pathways induces C fiber afferents to become mechanoreceptors which initiate reflex voiding. Resiniferatoxin inhibits stimulatory transmission from the bladder's afferent C fibers. Botulinum-A toxin selectively blocks acetylcholine release from presynaptic parasympathetic neuromuscular junctions thereby preventing detrusor hyperactivity. Clinical trials comparing the efficacy of single dose intravesical resiniferatoxin versus intravesical injections of botulinum–A toxin reveal both provide beneficial clinical and urodynamic results. Botulinum-A toxin injections however provide significantly superior clinical and urodynamic benefits over a longer time period than intravesical resiniferatoxin.

There are few studies documenting the efficacy and clinical applicability of sacral nerve stimulators in patients with neural injuries or congenitally maldeveloped nerves. Transcutaneous low-frequency neuromodulation has been used commonly in adults and less frequently in neurologically normal children to inhibit detrusor overactivity and treat urge incontinence. To date, the long-term results of transcutaneous neuromodulation in patients with neural injuries have not been described.

Aslan AR, Kogan BA: Conservative management in neurogenic bladder dysfunction. CURR OPINION IN UROL 2002;12:473-477.

Giannantoni A, Di Stasi SM, Stephen RL, et al: Intravesical resiniferatoxin versus botulinum-A toxin injections for neurogenic detrusor overactivity: A prospective randomized study. J UROL 2004;172:240-243.

Question #73 **ANSWER=C**

Diagnosis of upper tract urothelial carcinoma is heavily dependent on imaging. Although sonography can be helpful, it does not have the sensitivity of the other listed modalities. Historically intravenous urography and retrograde urography have been the diagnostic modalities of choice. However, more recently CT urography has been increasingly used. The sensitivity of this modality approaches nearly 100% (compared to approximately 70% for intravenous and retrograde urography). In addition, radiolucent filling defects can be better imaged by CT urography. Although MRI is evolving, comparative studies are lacking. In addition, MRI has poorer spatial resolution compared to CT scan imaging and suffers from motion artifact.

Flanigan RC: Urothelial tumors of the upper urinary tract, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 48, pp 1645-1647.

Vikram R, Sandler CM, Ng CS: Imaging and staging of transitional cell carcinoma: Part 2, upper urinary tract. AM J ROENTGENOLOGY 2009;192,1488-1493.

Question #74 **ANSWER=A**

Dilation of the ureter occurs commonly during pregnancy and is most prominent by the 22nd to 24th week. Although various experiments have suggested that estrogens, progestins, placental hormones and increased GFR may play a role in the dilation, mechanical compression is the most significant factor. Indeed, quadrupeds have a lower incidence of ureteral dilation during pregnancy than bipeds.

Pais VM Jr, Strandhoy JW, Assimos DG: Pathophysiology of urinary tract obstruction, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 37, p 1219.

Question #75 **ANSWER=B**

In this patient with significant hypokalemia after diuretic use, the working diagnosis is a primary aldosterone producing tumor. The diagnosis is confirmed by evidence of elevated 24-hour urinary aldosterone levels after salt loading. The next step is to localize the site of the tumor. These tumors are generally localized by CT scan identifying the adrenal mass. If no mass is visible, selective adrenal vein sampling under ACTH stimulation is highly sensitive for localization of which adrenal gland is the source of the elevated aldosterone production. Ultrasound localization of the adrenal tumor is usually not sensitive enough to detect an adrenal tumor in an adult but may be used in a child. MIBG scan is used to localize pheochromocytomas, to find metastatic pheochromocytoma site or to help identify the site of an extra adrenal paraganglioma. Iodocholesterol scanning is performed using radioactive labeled cholesterol; like the MIBG scan it lacks the special orientation of a CT or MRI scan. Iodocholesterol scans are primarily used to find ectopic steroid producing tumors.

Vaughan ED Jr, Blumenfeld JD. The adrenals, in Wein AJ. Kavoussi L, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, WB Saunders Co, 2007, vol 2, chap 53, p 1834.

Question #76 **ANSWER=A**

The patient remains on a subtherapeutic dose of oxybutynin and adverse effects are not reported. Therefore, increasing the dose to as high as 30 mg daily (as tolerated) would be the most appropriate first step. Adding or changing to another agent is not yet necessary.

Cystoscopy is not warranted. Neuromodulation is not indicated at this point as the patient has not had adequate medical therapy in terms of strength of drug or duration of therapy.

Abrams P, Drake M: Overactive bladder, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 61, pp 2085-2088.

Peterson AC, Webster GD: Urodynamic and videourodynamic evaluation of voiding dysfunction, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 58, pp 1987-1988.

Question #77 **ANSWER=D**

Recent concerns over the transmission of sexually transmitted diseases by donor insemination have led to the use of frozen donor sperm, which permits quarantine of frozen sperm with re-screening of donors. The disadvantage of this increased safety is a lower per cycle pregnancy rate with intrauterine insemination, largely due to decreased motility of frozen-thawed donor sperm. The number of insemination cycles required to achieve a pregnancy may increase, although the cumulative pregnancy rates appear to be the same as with fresh semen. In contrast, use of frozen donor sperm with in vitro fertilization does not affect implantation rates, embryonic vitality scores or the number of spare embryos.

Anger JT, Gilbert Br, Goldstein M: Cryopreservation of sperm: Indications, methods, and results. J UROL 2003,170:1081-1082.

Question #78 **ANSWER=C**

The development of bladder calculi is a frequent complication following bladder augmentation. Sodium restriction to treat hypercalciuria is unnecessary since these stones are not usually due to hypercalciuria. Increased frequency of catheterization will not decrease stone formation. Potassium citrate supplementation has not proven to be effective in reducing the incidence of bladder calculi after augmentation. Antibiotic prophylaxis has not been proven to be effective in preventing stones following bladder augmentation as they are not induced by infection. The most effective means of preventing stone formation is daily bladder irrigation to eradicate retained mucus, which has been shown to be a nidus for bladder stone formation.

Ho KLV, Segura JW: Lower urinary tract calculi, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 84, pp 2667-2669.

Adams MC, Joseph DB: Urinary tract reconstruction in children, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 124, p 3684.

Khoury AE, Salomon M, Doche R, et al: Stone formation after augmentation cystoplasty: The role of intestinal mucus. J UROL 1998;158:1133-1137.

Question #79 **ANSWER=E**

The ease of the transscrotal approach for penile prosthesis implantation and the proximity of the urethra has allowed the evolution of a new strategy for dual implantation of an artificial urinary sphincter (AUS) and inflatable penile prosthesis (IPP) at a single setting. Concerns regarding increased infection rates and poor outcomes have prevented widespread acceptance of this simultaneous implantation technique.

A multi-institutional evaluation of dual prosthesis implantation was performed to determine the overall efficacy, safety and long-term success of this innovative approach. Only patients undergoing dual implantation via a single transscrotal technique were included for evaluation. A total of 22 men underwent AUS and IPP device implantation between 2000 and 2003 in a synchronous manner. Mean followup was 17 months. Complications were urethral erosion in two patients (9%) and reservoir migration in two (9%), of whom one underwent revision. Importantly no patient experienced a prosthetic infection postoperatively. The overall revision rate was 14%, due to urethral erosion of the AUS in two patients and reservoir migration in one. Initial intermediate followup in patients who underwent synchronous dual prosthetic implantation was favorable. The inherent advantage of a single anesthetic event and a single transscrotal incision should encourage widespread acceptance of this technique. Sling insertion and the IPP may also be done simultaneously.

Kendirci M, Sanjeev Gupta S, Shaw K, et al: Synchronous prosthetic implantation through a transscrotal incision: An outcome analysis. J UROL 2006;175:2218-2222.

Question #80 **ANSWER=C**

Eighty percent of patients with end-stage renal failure develop acquired renal cystic disease, and 1-2% will develop renal carcinoma. In fact, 15% of patients with renal carcinoma in this setting will present with metastatic disease. Thus screening and treatment are important. The patient in question has unilateral bleeding and no evidence of infection as a cause. Due to the increased risk of malignancy, right nephrectomy is recommended. A negative needle biopsy alone would not be sufficient to exclude tumor.

Campbell SC, Novick AD, Bukowski RM: Renal tumors, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 47, p 1599.

Question #81 **ANSWER=E**

Approximately 6% of bladder augmentations will fail due to high pressure contractions of the augmenting segment, especially if not detubularized. Persistent bladder overactivity places the patient at risk for incontinence, perforation, and upper tract changes. In spite of pharmacologic management, there is still high bladder pressure making further medical management unlikely to work. Injection of a bulking agent around the bladder neck will not address the primary problem of bladder overactivity. Augmenting the augmented bladder with an additional segment of ileum will treat the problem.

Adams MC, Joseph DB: Urinary tract reconstruction in children, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 124, p 3680.

Question #82 **ANSWER=E**

Diplopia, blurred vision and loss of color vision (chromatopsia) is related to cross activity that some PDE5 inhibitors have for PDE6, the retinal phototransduction enzyme. This is most pronounced with sildenafil and vardenafil and is rarely associated with tadalafil as the latter has very little affinity for PDE6. An ophthalmologic consultation is not required as the adverse event is well documented. An ophthalmologist should be seen for loss of visual acuity or blindness. The fact that the patient responded well to a sildenafil illustrates that his autonomic neuropathy is minimal and the need for more invasive treatments such as transurethral PGE1 suppository or intracavernosal injection therapy is low. Penile pain due to PGE1 suppository or PGE1 injection monotherapy may be experienced.

Lue TF, Broderick GA: Evaluation of nonsurgical management of erectile dysfunction and premature ejaculation, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 22, p 776.

Question #83 **ANSWER=B**

The zona fasciculata is responsible for cortisol production, the zona glomerulosa for mineralocorticoid production, and the zona reticularis for androgen and estrogen production. The adrenal medulla secretes catecholamines.

Vaughan ED Jr, Blumenfeld JD: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 53, p 1825.

Question #84 **ANSWER=E**

This child presents with classic post streptococcal acute glomerulonephritis. The latency period for a beta-hemolytic streptococcal pyoderma is 21 to 30 days. Diagnosis is made by a positive anti-streptolysin-O or streptozyme titer and a decreased serum complement of C3 and C4 concentrations. Elevated anti-neutrophil cytoplasmic antibodies are found in the circulation of patients with necrotizing systemic vasculitis such as polyarteritis nodosa and Wegener's granulomatosis. Anti-glomerular basement membrane antibodies are seen in patients with Good Pasture's Syndrome. Mesangial deposits of IgA occur with IgA nephropathy. Symptoms of post infectious glomerulonephritis is sometimes confused with IgA nephropathy, however, the prodromal period between the two are different. Gross hematuria in-patients with IgA nephropathy occurs during the acute illness compared to the latency seen in post streptococcal glomerulonephritis, seven days for strep pharyngitis 30 days for strep pyoderma.

Noe HN, Jones DP: Renal disease in childhood, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 111, p 3226.

Question #85 **ANSWER=B**

DDAVP may be used for the treatment of nocturnal polyuria. DDAVP results in hypertension due to its effects on the V1 receptor. It increases effective circulating volume, increases potassium excretion and results in increased insertion of aquaporin channels in the collecting duct which is the mechanism by which it exerts its fluid retention properties. DDAVP increases urea reabsorption in the medullary collecting tubule maintaining the high interstitial osmolality required for fluid reabsorption. Increased water retention in excess of sodium retention will lead to hyponatremia.

Shoskes DA, McMahon AW: Renal physiology and pathophysiology, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 35, p 1137.

Question #86 **ANSWER=A**

The clinical manifestations of pheochromocytoma in the familial syndromes are the same as those in sporadic cases except that in familial syndromes, the pheochromocytomas are almost always bilateral and more frequently malignant.

Vaughan ED Jr, Blumenfeld JD: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 53, p 1860.

Question #87 **ANSWER=D**

This man has hypertension and hypokalemia, therefore evaluation for primary aldosteronism is indicated. Measurements of aldosterone should be performed only after potassium supplementation because aldosterone secretion is attenuated by the potassium deficit. Also, angiotensin converting enzymes and calcium channel blockers must be discontinued for at least two weeks before diagnostic evaluation since they may reduce aldosterone biosynthesis and improve hypokalemia in some patients. Adrenal evaluation by CT scan is not cost effective and is unwarranted until other causes are eliminated.

Vaughan ED Jr, Blumenfeld JD: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds):

CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 53, pp 1846-1856.

Question #88 **ANSWER=E**

The AUA premature ejaculation (PE) guidelines suggest that patient and partner satisfaction is the main end-point in the treatment of PE. The patient and his partner (should one exist) can be reassured that PE is a common and treatable disorder. Information on the risks and benefits of all therapeutic options should be presented to the patient (and partner) so that an educated treatment choice may be made by the patient in consultation with the physician. Premature ejaculation is not a life-threatening condition; therefore, safety should be another significant consideration. Of note, none of the medical therapies currently employed in the management of PE have been approved by the Food and Drug Administration for this specific indication.

Montague DK, Jarow J, Broderick GA, et al: Guideline on the pharmacologic management of premature ejaculation. PHARMACOLOGIC MANAGEMENT OF PREMATURE EJACULATION GUIDELINE. American Urological Association Education and Research, Inc, 2004. http://www.auanet.org/content/guidelines-and-quality-care/clinical-guidelines.cfm?sub=pme

Question #89 **ANSWER=A**

Tumor recurrence in the prostatic urethra is common following intravesical BCG therapy for superficial urothelial carcinoma of the bladder. If the recurrence is confined to the prostatic urethral epithelium, it may be completely eradicated by the TURP. Delivery of an additional course of BCG can effectively be administered and treat prostatic urethral CIS after TURP. This approach will reduce recurrence of the CIS as compared to observation and subsequent cystoscopy, and is thus a preferred treatment. Mitomycin C is a less effective agent against CIS than BCG. Repeat TURP is unnecessary. Radical cystoprostatectomy is necessary if the CIS does not respond to BCG. Otherwise it is overly aggressive in this setting.

Jones JS, Campbell SC: Non-muscle-invasive bladder cancer (Ta, T1, and CIS), in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 76, pp 2455-2456.

Question #90 **ANSWER=D**

All medications should be used with caution during any trimester of pregnancy. UTIs will occur in 4-7% of pregnancies and it is generally recommended that penicillins and cephalosporins should be used for treatment. Medications that are relatively contraindicated during pregnancy include the fluoroquinolones, trimethoprim, erythromycin, tetracycline, sulfonamides, and nitrofurantoin. Fluoroquinolones are contraindicated because of their effects on immature cartilage. Trimethoprim may have teratogenic effects and should be avoided, especially in the first trimester. Tetracycline may cause fetal malformations and maternal liver decompensation.

Sulfonamides may cause kernicterus and neonatal hyperbilirubinemia and should be avoided in the third trimester. Nitrofurantoin can cause hemolytic anemia in both mother and child when glucose-6-phosphate dehydrogenase deficiency is present.

Schaeffer AJ, Schaeffer EM: Infections of the urinary tract, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 8, pp 289-292.

Question #91 ANSWER=B

Detrusor external sphincter dyssynergia occurs in spinal lesions located between the pons and sacral spinal cord. It is characterized by detrusor overactivity and concomitant involuntary contraction of the external sphincter. This results in a narrowed or closed membranous urethra with a proximally dilated prostatic urethra.

Wein AJ: Lower urinary tract dysfunction in neurologic injury and disease, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 59, p 2037.

Question #92 ANSWER=D

In an older patient with medical problems, ureteroscopic biopsy, electro-resection and laser destruction has been utilized to successfully manage small, low grade, non-invasive ureteral tumors. This approach may avoid nephroureterectomy or partial resection. Although, historically, distal ureterectomy and reimplantation has been considered, endoscopic management of solitary low grade tumors have become the preferred treatment. Upper tract BCG may be effective for high grade disease, but delivery of the agent is least consistent when relying on reflux around a ureteral stent.

Sagalowsky AI, Jarrett TW: Management of urothelial tumors of the renal pelvis and ureter, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 49, pp 1672-1675.

Question #93 ANSWER=E

Aldosterone is a mineralocorticoid produced in the adrenal cortex. Its main site of action is in the distal tubule. Aldosterone acts on the distal renal tubule to promote the absorption of sodium and the excretion of potassium. The main stimulus for aldosterone release is decreased renal perfusion which causes the juxtaglomerular apparatus within the kidney to release renin. Renin promotes the conversion of angiotensinogen to angiotensin I. Angiotensin I is converted to angiotensin II which stimulates aldosterone release. Elevated potassium also stimulates aldosterone release, but is less potent than decreased renal perfusion.

Vaughan ED Jr, Blumenfeld JD: Pathophysiology, evaluation, and medical management of adrenal disorders, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 53, pp 1824-1828.

Question #94 **ANSWER=B**

T cell lymphocytes are central to the generation of an effective tumors, anti-infective, and transplant immune responses. In urological tumor, T cells with markers CD8+ and CD4+ can both destroy tumor cells by elaboration of cytoplasmic granules containing the pore-forming protein perforin, resulting in plasma membrane disruption. In addition, T cells can upregulate Fas ligand that can bind to Fas to induce apoptosis. The elaboration of interferon gamma is known to be critical in activation of other effector cells, such as macrophages.

Flechner SM: Basic Principles of Immunology, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, WB Saunders Co, 2007, vol 1, chap 15, p 495.

Question #95 **ANSWER=C**

The majority of patients tolerate BCG instillation well. In 2,602 patients treated with different strains of BCG, high fever (> 39 degrees C) was noted in 2.9% of patients. Life-threatening BCG sepsis was noted in 0.4%. Fever greater than 39.5 degrees C that does not resolve within 12 hours despite antipyretic therapy is potentially dangerous. Since most cases of BCG sepsis are associated with intravenous absorption of BCG it is recommended that BCG not be given until at least one week after tumor resection. In the patients who died from BCG sepsis, almost all cases had traumatic catheterization before instillation therapy or they were treated too early after TURBT or biopsy. Treatment should include isoniazid 300 mg, rifampin 600 mg, and ethambutol 1200 mg daily. After antituberculosis drugs are started, corticosteroids may be given if the patient is toxic. Given the timing of the signs and symptoms in relation to the BCG instillation, acute UTI is much less likely to be a cause.

Jones JS, Campbell SC: Non-muscle-invasive bladder cancer (Ta, T1, and CIS), in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 76, p 2459.

Lamm DL, van der Meijden APM, Morales A, et al: Incidence and treatment of complications of Bacillus Calmette-Guerin intravesical therapy in superficial bladder cancer. J UROL 1992,147:596.

Question #96 **ANSWER=E**

This boy has CAH and presents with precocious puberty. Elevation of the serum 17-hydroxyprogesterone helps in making this diagnosis. Treatment with corticosteroids is therapeutic. Young children are often inconsistent in taking medications. In those who stop medications or are on an insufficient dose, multiple "adrenal rests" develop in the testes. They will usually resolve with appropriate steroid treatment. Occasionally they may become autonomous. Biopsy is unnecessary, but if done, will look identical to Leydig cell tumors, but without Reinke crystals. Radiographic imaging of the pituitary and adrenal is not needed unless there is other evidence of pituitary stimulation or excess adrenal androgen production.

Ritchey ML, Shamberger RC: Pediatric urologic oncology, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 130, p 3904.

Question #97 **ANSWER=A**

Most traumatic AV fistulas of the kidney, such as those caused by percutaneous biopsy, are asymptomatic, small, and will close spontaneously without intervention. Symptomatic fistulas can cause hypertension, persistent hematuria, or high-output heart failure. Symptomatic AV fistula can be managed by embolization, operative ligation of the feeding vessels, or partial/complete nephrectomy depending upon their size and location.

Novick AC, Fergany A: Renovascular hypertension and ischemic nephropathy, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 36, pp 1189-1190.

Question #98 **ANSWER=D**

Local recurrence after radical nephrectomy is uncommon (approximately 2-4% of cases). Although local recurrence of renal cancer often precedes the development of widespread metastases, a significant percentage have local disease only and may be salvaged with surgical excision. Resection can provide a long-term cancer free status for about 30-40% of patients in this situation. Radiation therapy can help with palliation. The role of immunotherapy is unclear in this setting. Tyrosine kinase and VEGF inhibitors have not been evaluated in this setting.

Esrig D, Ahlering TE, Lieskovsky G, et al: Experience with fossa recurrence of renal cell carcinoma. J UROL 1992;147:1491-1496.

Campbell SC, Novick AD, Bukowski RM: Renal tumors, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 47, p 1622.

Question #99 **ANSWER=C**

This boy likely has an injury to the collecting system in a chronically obstructed kidney. The most likely sites of extravasation are the dilated pelvis or fornix. However, a UPJ disruption is also possible and needs to be excluded. The radiographic sign of importance is the absence of distal ureteral filling during the CT scan. Renal salvage is enhanced by early diagnosis which may be best confirmed by retrograde pyelography in preparation for a definitive repair. Prior to any type of open exploration, the status of the ureter needs to be defined. At the time of the retrograde pyelogram, a stent may be left in the ureter distal to the disruption to facilitate surgical dissection.

Casale AJ: Urinary tract trauma, in Gearhart JP, Rink RC, Mouriquand PDE (eds): PEDIATRIC UROLOGY. Philadelphia, WB Saunders Co, 200, chap 59, pp 923-943.

Husmann D: Pediatric genitourinary trauma, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 132, p 3936.

Question #100 **ANSWER=C**

Elderly patients have an elevated risk of hyponatremia from desmopressin use, and in general, it should be discouraged. In this patient, the presence of hyponatremia and potential CHF (i.e., peripheral edema) increases his risk. Hypertension, glaucoma, atrial fibrillation are not contraindications in and of themselves.

Resnick NM, Yalla SV: Geriatric incontinence and voiding dysfunction, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 71, p 2317.

Question #101 **ANSWER=B**

The findings in this patient are a classic history as well as laboratory and radiographic findings of a juxtaglomerular cell tumor. These rare, benign tumors occur most commonly in people less than 20 years of age and are curable by surgical excision. The hypokalemia results from secondary hyperaldosteronism. Patients with aldosteronomas should have suppressed plasma renin levels. These findings are not characteristic of the other tumors listed. Pheochromocytomas cause hypertension by release of sympathetic amines and do not cause hypokalemia.

Campbell SC, Novick AD, Bukowski RM: Renal tumors, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 47, p 1582.

Question #102 **ANSWER=B**

Consumption of a low carbohydrate high protein diet delivers a marked acid load to the kidney, increases the risk for stone formation, decreases estimated calcium balance, and may increase the risk for bone loss. This leads to increased urinary calcium and uric acid excretion, decreased citrate excretion, and lowering of urinary pH.

Reddy ST, Wang CY, Sakhaee K, et al: Effect of low-carbohydrate high-protein diets on acid-base balance, stone-forming propensity, and calcium metabolism. AM J KID DIS 2002;40:265-274.

Question #103 **ANSWER=B**

The presence of HIV in a patient has historically been considered a contraindication to transplantation because of the following concerns: (1) a stable HIV-positive candidate will immunologically decompensate with immunosuppression; (2) the viral load will increase and/or immunosuppression may enhance HIV mutations; (3) the pharmacokinetics and pharmacointeractions of antiretroviral agents and immunosuppression may lead to subtherapeutic effects or toxicity; and (4) the public perception of offering transplantation to HIV-positive patients will lead to diminished support for donation. Limited experience prior to now suggested that organ transplantation is effective in selected HIV-positive patients. Several key papers have been recently published on the topic of organ transplantation in HIV-positive patients, as well as important clinical research developments that would not preclude HIV status as a contraindication as previously practiced. The concomitant use of immunosuppressive agents does not seem to increase the virulence, recurrence, or progression of HIV disease. The co-infection with hepatitis C virus also is not an absolute contraindication unless there is evidence of cirrhosis. CD4 is a primary receptor used by HIV-1 to gain entry into host T cells. CD4 counts < 100 is one definition of AIDS and is an absolute contraindication to transplantation.

Stock PG, Roland ME, Carlson L, et al: Kidney and liver transplantation in human immunodeficiency virus-infected patients: A pilot safety and efficacy study. TRANSPL 2003;76:370-375.

Question #104 **ANSWER=A**

Although chemotherapy is generally well tolerated in patients with urinary diversion, methotrexate toxicity has been documented. Methotrexate toxicity can be compounded in patients who require adjuvant therapy after radical cystectomy and neobladder construction due to reabsorption of this agent by the neobladder. Vigorous hydration and alkalinization of the urine along with liberal leucovorin rescue is indicated to reduce the likelihood of this complication. In patients with continent diversion receiving chemotherapy, consideration should be given to pouch drainage during drug administration. 5-fluorouracil is rarely used in the treatment of invasive bladder cancer. Cisplatin, Adriamycin and vincristine are not reabsorbed by ileal mucosa.

Dahl DM, McDougal WS: Use of intestinal segments in urinary diversion, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 80, pp 2573-2574.

Question #105 **ANSWER=A**

The rate of bladder filling (ml/min) is calculated by determining the child's predicted bladder capacity (average bladder capacity in ml = age in years + 2 X 30) and dividing the result by 10. In this case, (3+2) X 30 = 150/10 = 15 ml/min or less. It is important not to fill the bladder too fast as it may result in falsely low levels of detrusor compliance and may produce artifactual detrusor contractions. Filling at 10 percent per minute of the calculated bladder capacity (or less) avoids these problems.

Yeung CK, Sihoe JD, Bauer SB: Voiding dysfunction in children: Non-neurogenic and neurogenic, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 123, pp 3616-3618.

Question #106 **ANSWER=D**

When a penile prosthesis that is too long is implanted, the patient may complain of pain that does not subside as healing takes place after device implantation. Alternatively, it may lead to erosion of the rod either into the meatus or through the glans. Buckling may also cause erosion through the tunica albuginea. Reoperation with placement of smaller rods usually relieves the pain and avoids impending erosion. Cylinders that are too long may result in a sigmoid (S) penile deformity that might lead to premature cylinder failure. Antibiotic therapy will not improve his pain and patching the tear in the tunica albuginea will fail secondary to the oversized prosthesis.

Montague DK: Prosthetic surgery for erectile dysfunction, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 23, pp 795-797.

Question #107 **ANSWER=D**

Entero-pouch fistulas have been reported after ileal and right colon urinary diversion. The diagnosis should be suspected in patients who present with gastrointestinal symptoms and metabolic acidosis. These fistulas are most common after pelvic irradiation. Conservative therapy is often effective with low residue diet and continuous pouch drainage. Further diagnostic evaluation with colonoscopy or pouch endoscopy is of little value, and biopsy or fulguration may enlarge the fistula. Bilateral nephrostomy drainage alone will not achieve maximal drainage of the pouch. Open surgical exploration may be required if this regimen fails.

Rovner ES: Urinary tract fistula, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 72, p 2362.

Question #108 **ANSWER=D**

The bladder is visible in the fetus at 14 weeks gestation. Nonvisualization of the bladder is seen in the fetus with poor renal function and oligohydramnios, cloacal exstrophy, bladder exstrophy and persistent cloaca. The finding of normal kidneys and normal amniotic fluid excludes bladder agenesis and ectopic ureters. The bladder is visualized with a patent urachus. Prenatally diagnosed bladder exstrophy demonstrates an absent bladder, anterior abdominal mass and low-set umbilicus on ultrasound examination.

Gearhart JP, Ben-Chaim J, Jeffs RD, Sanders RC: Criteria for the prenatal diagnosis of classic bladder exstrophy. OBS & GYN 1995;85:961-964.

Gearhart JP, Mathews R: Exstrophy-epispadias complex, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 119, p 3507.

Question #109 **ANSWER=C**

The T-shunt is a cavernosal-glanular shunt that is a simple shunt for the treatment of ischemic priapism. It has demonstrated success even after prolonged periods of ischemic erection with the majority of men preserving erectile function following treatment. An 11-blade is inserted through the glans and into the distal corpus cavernosum. It is then rotated 90 degrees and removed creating the "T". A Hegar dilator is then inserted into the incision and dilated down the length of the corpora. The penis is observed in the operating room for 15 minutes and if it remains flaccid a unilateral procedure is adequate. Should the erection return the next step is a bilateral procedure. Observation would not be appropriate at his time and irrigation would not be effective. A more proximal shunt is not indicated until continued failure of the T-shunt.

Burnett AL: Priapism, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 26, pp 846-848.

Brant WO, Garcia MM, Bella AJ, et al: T-shaped shunt and intracavernous tunneling for prolonged ischemic priapism. J UROL 2009;181:1699-1705.

Montague DK, Jarow J, Broderick GA, et al: Guideline on the management of priapism. MANAGEMENT OF PRIAPISM GUIDELINE. American Urological Association Education and Research, Inc, 2003. http://www.auanet.org/content/guidelines-and-quality-care/clinical-guidelines.cfm?sub=priapism

Question #110 **ANSWER=C**

Involvement of the contralateral testis with intraepithelial neoplasia (CIS) occurs in 4-5% of patients with germ cell tumors. The presence of an atrophic contralateral testis appears to be a significant risk factor for this condition. While it is controversial, there does appear to be significant risk of developing tumor in the contralateral testis if left untreated. In an attempt to avoid a bilateral orchiectomy, localized radiation was introduced in 1985 as treatment of CIS in the contralateral gonad. Radiotherapy eradicates CIS cells to prevent cancer development and to preserve sufficient Leydig cell function. Low-dose XRT has been shown to be highly effective and more effective than chemotherapy in this setting while preserving Leydig cell function in most patients.

Richie JP, Steele GS: Neoplasms of the testis, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 29, pp 897, 898, 899.

Question #111 ANSWER=E

In the absence of a UTI, a VCUG or urodynamic evaluation is overly invasive. A spinal MRI scan is not warranted in the absence of any neurologic abnormality or spinal defect. Although oxybutynin is acceptable empiric treatment, it will likely make the constipation worse. Aggressive treatment of the constipation has been shown to benefit not only the encopresis, but also the urinary incontinence.

Yeung CK, Sihoe JD, Bauer SB: Voiding dysfunction in children: Non-neurogenic and neurogenic, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 123, pp 3614-3619.

Question #112 ANSWER=B

In this particular patient, the presence of persistent edema and tissue changes in a patient who has failed repair five months earlier may indicate undetected malignancy. If there is any suspicion, a biopsy should be performed to rule out malignancy. If benign, surgical repair may be carried out by either a vaginal or transabdominal approach at the discretion of the surgeon when the tissue quality appears suitable for repair. This may be determined by serial cystoscopy and vaginal exams as indicated. Fibrin sealant has not been shown to be effective in repair of large fistula.

Rovner ES: Urinary tract fistula, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 72, p 2326.

Question #113 ANSWER=C

Overall, about 70% of patients with unifocal stage T1a (focally or minimally invasive) can be successfully managed with intravesical therapy, so at least one course of intravesical therapy should be strongly considered. Immunomodulators such as BCG or interferon are dependent on an intact immune system, and tend to be less effective in immuno-suppressed patients. A course of mitomycin C followed by close surveillance would be the best option, followed by surgery if refractory disease was encountered. Although partial or radical cystectomy may be indicated in some patients with high grade T1 tumors, these treatment options are overly aggressive for the patient with first time, focal T1 disease.

Jones JS, Campbell SC: Non-muscle-invasive bladder cancer (Ta, T1, and CIS), in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 76, pp 2457-2459.

Question #114 **ANSWER=A**

This infant has stage IV-S neuroblastoma. This can include involvement of skin, liver, and bone marrow without bone metastases on skeletal survey. Observation therapy alone in children less than one year of age is usually sufficient and metastases regress. In older children, or in cases where metastases do not regress, chemotherapy is used.

Ritchey ML, Shamberger RC: Pediatric urologic oncology, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 130, pp 3873-3875.

Question #115 **ANSWER=B**

Recent research suggests that the power level of the priming dose is not the factor responsible for the protection from injury from SWL. Instead, it was observed that inclusion of a 3 to 4 minute pause following the priming dose was protective, while increasing the power setting without this delay did not result in reduced injury. Increasing the shockwave firing rate would increase the renal injury incurred.

Lingeman JE, McAteer JA, Assimos DG, et al: WHITE PAPER: CURRENT PERSPECTIVE ON ADVERSE EFFECTS IN SHOCK WAVE LITHOTRIPSY. American Urological Association Education and Research, Inc, 2009. http://www.auanet.org/content/guidelines-and-quality-care/clinical-guidelines/main-reports/whitepaper.pdf

Question #116 **ANSWER=E**

Acute urinary retention following interstitial brachytherapy occurs between 12-35% of patients. Risk factors include a prostate volume of > 35 grams, a post-treatment volume of > 55 grams, number of needle punctures > 33 and an AUA Symptom Score of > 12. The postvoid residual and the uroflow score were not predictive of acute urinary retention following brachytherapy. Initial management includes catheter drainage and alpha-blocker therapy. Some studies have added a short course of steroid therapy to reduce the acute inflammation.

Locke J, Ellis W, Wallner K, et al: Risk factors for acute urinary retention requiring temporary intermittent catheterization after prostate brachytherapy: A prospective study. INT J RAD ONCOL BIOL PHYS 2002;52:712-719.

Catalona WJ, Han M: Definitive therapy for localized prostate cancer - An overview, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 95, p 2941.

D'Amico AV, Crook J, Beard CJ, et al: Radiation therapy for prostate cancer, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 100, p 3026.

Question #117 **ANSWER=D**

This girl is at risk for having sustained a significant urethral, vaginal, rectal, or bladder injury that may be underestimated by initial examination. Examination under anesthesia is essential to evaluate the extent of injury. Cystography is also needed to rule-out a bladder injury. Retrograde urethrography is unnecessary and technically difficult in a female. Suprapubic tube placement would not be necessary before the urethra is evaluated. A VCUG would be helpful if a catheter can be passed easily, however, will not rule-out a vaginal injury. A urethral catheter may be able to be passed in a very cooperative patient, however, the possibility of a vaginal injury would still need to be evaluated. If an unrecognized bladder neck or urethral injury is found, immediate reconstruction will be necessary to avoid complications such as pelvic abscess, urinary fistulization, and increased risk of incontinence.

Husmann D: Pediatric genitourinary trauma, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 132, pp 3943-3944.

O'Neill JA, Grosfeld, JL, Fonkalsrud EW, et al (eds): Abdominal and genitourinary trauma, in PRINCIPLES OF PEDIATRIC SURGERY, ed 2. St. Louis, Mosby, 2004 chap 13, p 174.

Lynch JM, Gardner MJ, Albanese CT: Blunt urogenital trauma in prepubescent female patients: More than meets the eye. PED EMER CARE 1995;11:372.

Question #118 **ANSWER=C**

According to the American Urological Association Best Practice Policy on Asymptomatic Microscopic Hematuria in Adults, the recommended definition of microscopic hematuria is 3 or more red blood cells per high-power field on microscopic evaluation of urinary sediment from two of three properly collected urinalysis specimens.

Grossfeld GD, Wolf JS Jr, Litwin MS, et al: Asymptomatic microscopic hematuria in adults: Summary of the AUA best practice policy recommendations. MICROSCOPIC HEMATURIA BEST PRACTICE STATEMENT. American Urological Association Education and Research, Inc, 2001. http://www.aafp.org/afp/20010315/1145.pdf

Question #119 **ANSWER=B**

Occasionally, surgeons will encounter difficulty approximating an orthotopic urinary diversion to the urethral stump in a patient with a particularly deep pelvis. When the pouch includes the right colon, the surgeon may obtain additional length on the mesentery by dividing the right colic artery. This artery, along with the ileocolic, middle colic, left colic, sigmoid artery and the three hemorrhoidal arteries make up the arc of Drummond and provide considerable leeway when mobilizing the colon. The right colic artery often arises off the superior mesenteric artery, but can sometimes be seen arising directly from the middle colic or ileocolic artery. Division of the right colic artery can be performed safely and will often result in greater length on the mesentery of a neobladder that includes the cecum or distal right colon. Division of the ileocolic artery will result in ischemia and/or necrosis of the neobladder and division of the middle colic artery will not result in any additional length on the mesentery and may also compromise the bowel anastomoses. Alternate diversions should not be considered until all possible options have been exhausted.

Dahl DM, McDougal WS: Use of intestinal segments in urinary diversion, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 80, p 2536.

Question #120 **ANSWER=B**

Studies on sexual function in males with spina bifida have demonstrated that paternity is associated with an L5 or sacral neurologic level. This neurologic level was present in 80% of patients who fathered children. This is in contrast to bladder function, which does not correlate well to the neurologic level of the lesion. The ambulatory status and presence of a ventriculoperitoneal shunt are other important factors associated with paternity. Serum testosterone levels are usually normal. Reflexogenic erections are present in the majority of spina bifida patients and are not predictive of paternity.

Yeung CK, Sihoe JD, Bauer SB: Voiding dysfunction in children: Non-neurogenic and neurogenic, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 123, pp 3639-3640.

Question #121 **ANSWER=A**

Electrohydraulic, or spark gap lithotriptors have the largest focal zones, and is likely the reason for their widespread acceptance. Piezoelectric devices have small focal zones, with wide apertures of entry, thus minimizing patient discomfort. Electromagnetic machines have smaller focal zones, but typically achieve higher pressures. Microexplosive lithotriptors have not been widely accepted due to the requirement for lead azide pellets, and electroconductive machines are currently not utilized but retained smaller focal zones. Ease of targeting with larger focal zones may lead to improved efficacy.

Lingeman JE, Matlaga BR, Evan AP: Surgical management of upper urinary tract calculi, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 44, pp 1465-1469.

Question #122 **ANSWER=C**

The use of immediate postoperative Mitomycin C has been shown to significantly reduce the risk of recurrence following resection of a bladder tumor. While the mechanism of action is not entirely clear, it is felt to be due to destruction of floating tumor cells and/or residual foci of cancer within the resection bed. At the time of transurethral resection, exposed fat within the resection bed is indicative of extraperitoneal perforation. The degree of extravasation can often be estimated at the time of resection by visual inspection, or it may require a cystogram. In cases of extravasation, administration of Mitomycin C is not advisable due to the risk of local necrosis and bladder contracture. In this case, it would be advisable to simply place a catheter and withhold the Mitomycin C.

Taneja SS, Chan S. Complications of intravesical chemotherapy, in Taneja SS, Smith RB, Ehrlich RM (eds): COMPLICATIONS OF UROLOGIC SURGERY: PREVENTION AND MANAGEMENT. Philadelphia, WB Saunders Co, 2001, pp 85-87.

Question #123 **ANSWER=D**

The infant has a failed pyeloplasty. In redo repairs, one must assess the anatomy carefully to determine whether a redo dismembered technique can be performed. When a long segment of stricture is present with an intrarenal pelvis, a repeat dismembered repair may not be technically feasible and/or will be at high risk for failure. Ureterocalicostomy is the most appropriate choice since it bypasses the need for an anastomosis to the pelvis. With this technique, it is important to remove as much parenchyma around the lower pole calyx as possible to allow a widely patent tension free anastomosis. If a large and redundant extrarenal pelvis were present, one could consider a spiral flap repair. Endoscopic manipulations in a one year old male infant with a long stricture are not efficacious. With 22% function nephrectomy is not appropriate.

Carr MC, El-Ghoneimi A: Anomalies and surgery of the ureteropelvic junction in children, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 115, p 3381.

Ellsworth PI, Walker RD, Elder JS: Management of the failed pyeloplasty. AUA UPDATE SERIES 1997, volume 16, lesson 17, pp 130-135.

Question #124 **ANSWER=A**

After a Roux-en-Y gastric bypass, the primary abnormalities noted that predispose to stone formation include low urine volume, high urine oxalate, and low urine citrate. Urinary sodium and calcium decrease after surgery. Urine volumes are low for the first year following gastric bypass due to the small stomach capacity resulting in decreased oral intake. High urinary oxalate is reflective of the fat malabsorptive component of the surgery which results in saponification of calcium thereby leading to increased oxalate absorption from the gut.

Duffey BG, Pedro RN, Makhlouf A, et al: Roux-en-Y gastric bypass is associated with early increased risk factors for development of calcium oxalate nephrolithiasis. JACS 2008;206:1145-1153. Epub 2008 Apr 14.

Question #125 **ANSWER=A**

Sorafenib is an oral agent used for the treatment of advanced RCC. It was approved by the FDA in December, 2005. It is a small molecule inhibitor of Raf kinase and VEGF receptor kinase. In a large, randomized study, sorafenib showed improved progression free survival. Side effects of sorafenib, as compared to placebo included hand-foot skin reactions (40% vs 16%), hemorrhage (15.3% vs. 8.2%), and hypertension (16.9% vs. 1.8%). Neuropathy and joint pain were relatively uncommon. Most of the hand-foot skin reactions were mild and occurred within the first six weeks of treatment. Management of hand-foot reactions includes administration of topical agents for symptomatic relief, temporary treatment interruption or dose modification for moderate skin reactions and permanent discontinuation in severe cases.

Escudier B, Szczylik C, Eisen T, et al: Randomized phase III trial of the raf kinase and VEGFR inhibitor sorafenib (BAY 43-9006) in patients with advanced renal cell carcinoma. PROC AM SOC CLIN ONCOL 2005;23:1093.

Question #126 **ANSWER=D**

It is important to select the ideal puncture site for percutaneous access into a continent reservoir to avoid injury to adjacent structures. Computed tomography or ultrasonography can be used to guide access to avoid injury to adjacent bowel. Stone volume and number may influence the decision to proceed with endoscopic versus open access. Stone composition and type of diversion does not impact the outcome of the percutaneous procedure.

L'Esperance JO, Sung J, Marguet C, et al: The surgical management of stones in patients with urinary diversions. CURR OPIN UROL 2004;14:129-134.

Question #127 **ANSWER=A**

After shock or trauma, fluid resuscitation has been aimed at restoring intravascular volume and repletion of "third-space" fluid shifts. The colloid-crystalloid debate has focused on these end points. Although these arguments are most relevant immediately after injury when death is due to exsanguination, recent data has shown that early fluid resuscitation modifies the inflammatory response that leads to multiple organ failure and late death.

Experimental observations showed that hypertonic saline (HTS) can affect the immune response. Specifically, HTS can down-regulate the expression of polymorphonuclear cell adhesion molecules, improve microvascular flow, and preserve organ function. It has no direct effect on pH or angiotensin II. Interestingly, Lactated Ringer solution has been shown to be proinflammatory and could potentially aggravate the postinjury inflammatory response.

Bulger EM, Jurkovich GJ, Nathens AB, et al: Hypertonic resuscitation of hypovolemic shock after blunt trauma: a randomized controlled trial. ARCH SUR 2008;143:139-148.

Question #128 **ANSWER=C**

The rate of tumor marker decline relative to expected half-life after treatment has been proposed as a prognostic index. The half life of AFP is five days. Beta-hCG is one to two days. Patients whose values decline according to half-life after treatment appear more likely to be disease free than those whose marker decline is slower or whose markers never return to normal levels. However, there are non-malignant causes of persistently elevated levels of both AFP and beta-hCG. Liver damage secondary to drugs, hepatitis and alcohol abuse may lead to an elevated AFP level. Beta-hCG may remain persistently elevated due to nonmalignant causes such as hypogonadism and marijuana use. In this patient, the most likely etiology is hypogonadism induced by alcoholism. This results in altered testis-pituitary feedback and secondary elevation of LH which cross-react with beta-hCG measurement, leading to false elevation of beta-hCG. HCG is not produced by yolk sac elements, but rather by syncytiotrophoblastic cells. Clearly, every effort should be make to exclude all false positive causes of tumor marker elevation before subjecting patients to unnecessary treatment.

Richie JP, Steele GS: Neoplasms of the testis, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 29, pp 907-908.

Question #129 **ANSWER=B**

Tricyclic antidepressants (TCAs) (e.g. imipramine) can cause toxicity at doses of 10-20 mg/kg. A 50 mg/kg dose is likely to be fatal. ICAs are absorbed in the small bowel and have antimuscarinic actions. Tissue levels, especially in myocardium, are much higher than serum levels. Toxic effects are central and peripheral antimuscarinic actions (amine pump blockage that enhances catecholamine actions) occur as well. Emetics will be too late in this case; the urgent need is cardiac monitoring. Hemodialysis will take more than an hour to institute and is an incorrect priority. Kayexalate will not help. Atropine is contraindicated. Physostigmine, used in the past, doesn't help with the cardiac effects of TCAs and may cause its own rhythm disturbances.

Yeung CK, Sihoe JD, Bauer SB: Voiding dysfunction in children: Non-neurogenic and neurogenic, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 123, pp 3619-3624.

Question #130 **ANSWER=A**

Acetohydroxamic acid (Lithostat), a urease inhibitor, may reduce the urine saturation of struvite and therefore retard stone formation. When given as an oral dose of 250 mg three times per day following complete stone removal, acetohydroxamic acid has been shown to prevent recurrence of new stones and to inhibit the growth of stones in patients with chronic urea-splitting infections. Complete blood counts should be monitored every three months due to the risk of hemolytic anemia with this medication.

Pietrow PK, Preminger GM: Evaluation and medical management of urinary lithiasis, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 43, p 1425.

Question #131 **ANSWER=A**

PSA bounce is described as a rise in serum PSA levels, following radiotherapy, over one or two consecutive measurements followed by a decline to ‘pre-bounce’ levels. The bounce phenomenon is observed in 12-38% of patients following radiotherapy. The American Society for Therapeutic Radiology and Oncology (ASTRO) criteria for relapse following prostate cancer therapy is three consecutive rises in serum PSA from a nadir level of at least 0.5 ng/ml. In this patient, the presence of two rises following a nadir is possibly consistent with PSA bounce. The patient has not met the criteria (PSA > 2 ng/ml over nadir) for relapse, and as such, therapeutic intervention for recurrence is not warranted. Likewise, further evaluation with biopsy or lymph node sampling is not warranted until relapse is confirmed.

Rosser CJ, Kuban DA, Levy LB, et al: Prostate specific antigen bounce phenomenon after external beam radiation for clinically localized prostate cancer. J UROL 2002;168:2001-2005.

Hanlon AL, Pinover WH, Horwitz EM, Hanks GE: Patterns and fate of PSA bouncing following 3D-CRT. INT J RAD ONCOL BIOL PHYS 2001;50:845-849.

Catalona WJ, Han M: Definitive therapy for localized prostate cancer - An overview, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 95, p 2940.

Question #132 **ANSWER=A**

Urinary incontinence following surgery for a PUV is common. Although in some instances this is secondary to the primary surgery in the urethra or bladder neck, the most common finding is bladder dysfunction. Three patterns of bladder dysfunction have been identified in boys with valves: myogenic failure, detrusor overactivity, and decreased compliance with a small bladder. In prepubertal boys with persistent incontinence, bladder instability from overactivity is the dominant pattern.

Casale AJ: Posterior urethral valves and other urethral anomalies, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 122, p 3597.

Question #133 **ANSWER=D**

Even though it may appear that only the bladder is injured, concomitant ureteral injuries must be ruled out at the time of the consult. The majority of ureteral injuries are not diagnosed intraoperatively. Laparoscopic hysterectomy is associated with higher incidence of ureteral injuries compared to open abdominal or vaginal approaches. To ensure that the ureters have not been also inadvertently divided, cystoscopy with bilateral pyeloureterograms should be performed prior to closure of the cystotomy. The other choices are reasonable to consider as part of the cystotomy closure depending on the clinical situation. However, to prevent the situation of a missed ureteral injury, it is best to perform a cystoscopy with bilateral retrograde pyeloureterograms.

Ostrzenski A, Radolinski B, Ostrzenska KM: A review of laparoscopic ureteral injury in pelvic surgery. OBSTET GYNECOL SURV 2003;58:794-799.

Harkki-Siren P, Sjoberg J, Tiitinen A: Urinary tract injuries after hysterectomy. OBSTET GYNECOL 1998;92:113-118.

Question #134 **ANSWER=C**

In a large prostate, visualization of the anterior prostate is impaired by the depth of penetration required due to the anterior-posterior diameter of the gland. Reduction in frequency will increase the depth of penetration of the ultrasound, but will reduce the resolution of the image. In improving visualization of the anterior transition zone, the ability to identify peripheral hypoechoic lesions will be reduced. Reduction in gain will further decrease sensitivity of detecting abnormalities, but will not improve depth of penetration. Neither color Doppler nor power Doppler will improve visualization of the anterior gland if not easily visualized on grey-scale image.

Bhayani SB, Siegel CL: Urinary tract imaging: Basic principles, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 4, p 122.

Question #135 **ANSWER=A**

The diaphragm extends around the posterior aspect of the kidney. The anteromedial surface of the kidney is adjacent to the psoas major but the posterior surface lies adjacent to the quadratus lumborum. The transversus abdominus muscle is more ventral.

Anderson JK, Kabalin JN, Cadeddu JA: Surgical anatomy of the retroperitoneum, adrenals, kidneys, and ureters, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 1, p 11.

Question #136 **ANSWER=A**

Syphilis in the United States is a concern especially among HIV patients. Approximately 2% of screened men with HIV have positive syphilis serology.

U.S. Preventive Services Task Force (USPSTF) recommends that men at increased risk should be screened for HIV and syphilis. Persons diagnosed with other sexually transmitted infections (i.e., chlamydia, gonorrhea, genital herpes simplex, human papilloma virus, and HIV) may be more likely than others to engage in high-risk behavior, placing them at increased risk for syphilis. Screening tests for syphilis include nontreponemal tests (VDRL or RPR) followed by confirmatory fluorescent treponemal antibody absorbed (FTA-ABS) or T. pallidum particle agglutination (TP-PA).

For epididymitis in sexually active men aged < 35 years, the CDC recommends: (1) urethral Gram stain, (2) urethral culture or nucleic acid amplification (PCR) test for N. gonorrhea and C. trachomatis, (3) examination of first-void uncentrifuged urine for leukocytes if the urethral Gram stain is negative, and (4) Syphilis serology and HIV counseling and testing. Empiric therapy with Ceftriaxone 250 mg IM in a single dose plus Doxycycline 100 mg orally twice a day for ten days is indicated before laboratory test results are available. Culture of the expressed prostatic secretions and percutaneous epididymal biopsy are not recommended.

Meyers D, Wolff T, Gregory K, et al: USPSTF recommendations for STI screening. AM FAM PHY. 2008;77:819-824.

MMWR. Sexually Transmitted Diseases Treatment Guidelines, 2006. August 4, 2006/ 55 (RR11); Gonococcal infections.

Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines 2002. MMWR 2002;51(No. RR-6): p 52.

Phipps W, Stanley H, Kohn R, Stansell J, Klausner JD: Syphilis, chlamydia, and gonorrhea screening in HIV-infected patients in primary care, San Francisco, California, 2003. AIDS PATIENT CARE STDS 2005;19:495-498.

Question #137 **ANSWER=D**

The production of AFP is limited to cells of the cytotrophoblast. In cases of testicular germ cell tumor, the presence of serum AFP confirms the tumor to be at least partially of nonseminomatous origin due to the presence of yolk sac elements. In this case, despite the fact that the histologic evaluation of the primary tumor demonstrates pure seminoma, the cancer must be treated as a NSGCT. In patients with residual mass following chemotherapy for metastatic NSGCT, a RPLND is indicated unless the mass shrinks to < 10% of its original size at the time of marker normalization. PET scan does not accurately characterize the nature of residual masses following chemotherapy as they may represent residual cancer, teratoma, or necrosis/fibrosis only. Given the serum marker normalization, additional chemotherapy is not necessary.

Richie JP, Steele GS: Neoplasms of the testis, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 29, pp 906, 920-922.

Question #138 **ANSWER=C**

Renal injury after a UTI in a patient with VUR will usually occur at the site of intrarenal reflux, a condition that is associated with compound calyces. Conversely, injury is less likely in other areas of the kidney, where the calyceal configuration is simple and in which there is not likely to be intrarenal reflux. Injury will occur at the time of the first infection in susceptible areas, but may not be permanent. In the case of early aggressive antibiotic therapy, a temporary injury may heal and a permanent scar may be avoided with a return to normal on a DMSA scan at nine months.

Shortliffe LMD: Infection and inflammation of the pediatric genitourinary tract, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 4, chap 112, pp 3256-3258.

Question #139 **ANSWER=D**

The patient is undergoing intermediate risk surgery with two intermediate clinical predictors of increased perioperative cardiovascular risk, diabetes, and renal insufficiency. The 2006 American College of Cardiology/American Heart Association practice guidelines recommend perioperative beta-blockade in these cases to reduce the incidence of myocardial infarction, heart failure or death. An angiotensin converting enzyme inhibitor such as captopril does not substitute for a beta-blocker, and while deep venous thrombosis prophylaxis with enoxaparin is indicated preoperatively, it is not necessary to begin dosage prior to surgery. In the absence of urinary tract infection, a fluoroquinolone will not lend additional benefit.

The American College of Cardiology/American Heart Association Task Force on Practice Guidelines. ACC/AHA 2006 guideline update on perioperative cardiovascular evaluation for noncardiac surgery: Focused update on perioperative beta-blocker therapy. J AM COLL CARDIOL 2006;47:2343-2355.

Question #140 **ANSWER=B**

During observation of small renal masses, serial imaging is utilized to monitor tumor progression over time. While the likelihood of tumor increase with larger size of the tumor, the size and shape of the tumor cannot generally distinguish a benign from a malignant renal tumor. The presence of fat in the tumor noted on imaging confirms the lesion to be an angiomyolipoma, but its absence does not allow the determination of the lesion to be malignant. Growth can occur in both benign and malignant solid renal tumors, however, of the choices listed, the best indicator of a malignancy is the rate of tumor growth on serial radiographic evaluations. To date, there is no radiographic feature that can reliably distinguish benign versus malignancy. Tumors with rapid enlargement are most likely to represent cancer. However, masses with zero or very minimal growth rates can be malignant. Larger tumors in particular may exhibit faster growth rates and are more likely to metastasize.

Campbell SC, Novick AD, Bukowski RM: Renal tumors, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 47, pp 1618-1619.

Question #141 **ANSWER=B**

Rupture of the corpus spongiosum and anterior urethra will be manifest by a perineal "butterfly" hematoma, limited by Colles' fascia. The corpora cavernosa, tunica albuginea, and posterior urethra are unlikely to be involved in a straddle injury. Posterior urethral injuries occur above the pelvic diaphragm are usually associated with a pelvic fracture, and not as a consequence of a straddle injury.

Brooks JD: Anatomy of the lower urinary tract and male genitalia, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 2, p 39.

Question #142 **ANSWER=C**

Radiocontrast media leads to a reversible decline in renal function in 10-30% of high risk patients, including diabetics and those with renal insufficiency. Administration of fluids before and after contrast media reduces the incidence of contrast-induced nephropathy, although the exact fluid regimen, including the type of fluid and the means of administration (oral versus IV) has not been clarified. N-acetylcysteine along with peri-procedural hydration can prevent contrast nephropathy; however, because of the inconsistent results, this agent is not routinely recommended for the prevention of contrast induced nephropathy. The other agents listed will not prevent contrast-induced nephropathy.

Barrett BJ, Parfrey PS: Clinical practice. Preventing nephropathy induced by contrast medium. NEJM 2006;354:379-386.

Question #143 **ANSWER=C**

Muscle-invasive bladder cancer associated with bilateral hydronephrosis has a poor prognosis, as this portends at a minimum extravesical disease. While there is some debate as to whether neoadjuvant vs. adjuvant chemotherapy is preferable in patients with cT3N0 bladder cancer, most clinicians agree that neoadjuvant chemotherapy is the preferred approach. Bilateral percutaneous nephrostomy tubes are advisable to minimize nephrotoxicity associated with chemotherapy. In addition, the chemotherapeutic regimen administered in patients with renal insufficiency is modified and often carboplatin is substituted for cisplatin. Bladder-sparing protocols, while occasionally acceptable in patients with muscle-invasive disease, are contraindicated in patients with hydronephrosis.

Schoenberg MP, Gonzalgo ML: Management of invasive and metastatic bladder cancer, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 77, p 2473.

Question #144 **ANSWER=D**

All of the listed conditions can cause hyponatremia but the syndrome of inappropriate antidiuretic hormone secretion (SIADH) is the only one associated with hypouricemia and a normal serum BUN and creatinine. SIADH is due to sustained endogenous over-production of ADH. Patients with SIADH reach a steady state in which body water is expanded by water retention but in which natriuresis prevents edema. Relative volume expansion results in an increased GFR, tubular sodium wasting and reduced net tubular absorption of creatinine and uric acid. Volume contracted states such as Addison's disease and chronic diarrhea are associated with hyperuricemia and pre-renal azotemia. In congestive heart failure and cirrhosis, serum uric acid is in the high normal range and the BUN and creatinine are often elevated.

Kokko JP: Disorders of fluid volume, electrolyte and acid-base balance, in Bennett JC, Plum F (eds): CECIL TEXTBOOK OF MEDICINE. Philadelphia, WB Saunders Co, 1999, pp 525-551.

Shoskes DA, McMahon AW: Renal physiology and pathophysiology, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 35, pp 1146-1149.

Question #145 **ANSWER=B**

Chronic antibiotic use may reduce normal levels of Oxalobacter formigenes in the intestine. This anaerobe metabolizes as much as 50% of ingested oxalate. High calcium diets are associated with decreased oxalate absorption. Few cystic fibrosis patients have ileal absorption disorders. Vitamin C and glycine, while associated with oxalate metabolism, are unlikely to increase urinary levels significantly. An emerging treatment for reduced intestinal Oxalobacter formigenes is probiotics.

Hoppe B, von Unruh G, Laube N, et al: Oxalate degrading bacteria: New treatment option for patients with primary and secondary hyperoxaluria? UROL RES 2005;33:372-375.

Question #146 **ANSWER=C**

Active surveillance is a reasonable option for patients with low-risk prostate cancer. Specifically, patients with a Gleason score of 6 or less, PSA below 10 ng/ml and low tumor volume may be appropriate for active surveillance. This patient's risk profile makes him a reasonable candidate for this approach. However, a six-core biopsy is likely inadequate tissue sampling to truly identify indolent disease. Therefore, initiation of active surveillance protocol with quarterly PSA and repeat biopsy in one year is premature and immediate systematic prostate rebiopsy is the next step. Additional imaging, with either bone scan or pelvic CT or MRI scan, is unnecessary in low-risk patients and would be inappropriate in this setting. There is no data supporting the use of finasteride in the management of prostate cancer.

Eastham JA, Scardino PT: Expectant management of prostate cancer, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 96, p 2951.

Question #147 **ANSWER=B**

Embryologically the prostate develops from the urogenital sinus during the third fetal month. The prostate develops from mesoderm to form the inner zone while the outer zone develops from endoderm. These zones form concentric rings around the prostatic urethra. Generally speaking the inner zone eventually develops benign prostatic hyperplasia (BPH) and the outer zone is where cancers later form. In younger patients, the periurethral glands within the prostate are not prominent since BPH has not yet developed.

Roehrborn CB, McConnell JD: Benign prostatic hyperplasia: Etiology, pathophysiology, epidemiology, and natural history, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 3, chap 86, p 2734.

Question #148 **ANSWER=B**

Endometriosis of the urinary tract involves the ureter, typically the distal third, in 15-20% of cases. Although most patients with ureteral obstruction associated with endometriosis are asymptomatic, signs and symptoms may occur cyclically and include flank pain, dysuria, urgency, hematuria and frequent urinary tract infections. A trial of hormonal therapy using gonadotropin-releasing hormone agonists (Lupron) or medroxyprogesterone (Danazol) should be initiated for mild symptomatic obstruction when there is good preservation of renal function. For more severe obstruction associated with significant periureteral fibrosis, surgical intervention to correct the obstruction, with or without hysterectomy and bilateral salpingo-oophorectomy, is advisable.

Pais VM Jr, Strandhoy JW, Assimos DG: Pathophysiology of urinary tract obstruction, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 2, chap 37, p 1221.

Question #149 **ANSWER=E**

Osteoporosis is a well-known side effect of androgen deprivation therapy (ADT) in men with prostate cancer resulting in an increased risk of pathologic fracture and other complications. Urologists need to consider the risk of this complication and try to minimize it in men undergoing ADT. While weight loss is generally good for patients, it has minimal effect in preventing osteoporosis in this patient population. In fact, obesity may be protective to some degree. While intermittent ADT may reduce the amount of osteoporosis, changes in bone density have been seen in men who were on ADT for as little as nine months. Patients who are undergoing ADT should be started on calcium and Vitamin D, as studies have shown deficiencies in these substances in men who receive ADT. However, this will not prevent osteoporosis. To date, only two substances have been shown to prevent osteoporosis in men with prostate cancer undergoing ADT: pamidronate and zoledronic acid. Pamidronate and zoledronic acid are bisphosphonates. The mechanism of action is inhibition of bone resorption via action on osteoclasts or osteoclast precursors. While alendronate can prevent osteoporosis in the general population of male patients, it has not been studied in men on ADT and may not be potent enough to prevent bone loss, although it is often used in this setting.

Holzbeierlein JM, Thrasher JB: Managing side effects of androgen deprivation therapy. AUA UPDATE SERIES 2005, vol 24, lesson 32, pp 277-284.

Question #150 **ANSWER=D**

Cowper's glands are located on each side of the membranous urethra within the urogenital diaphragm. The duct of each is approximately 2.0 cm long and passes through the urethral opening in the urogenital diaphragm along the posterior aspect of the bulbous urethra and opens into the posterior aspect of the bulb.

Jordan GH, Schlossberg SM: Surgery of the penis and urethra, in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA (eds): CAMPBELL'S UROLOGY, ed 9. Philadelphia, Saunders Elsevier, 2007, vol 1, chap 33, p 1030.